

No. 499.---VOL. XV.]

[PRICE 6D.

MANUFACTURE (under the superintendence of the acting partner, Mr. Alexander G. Dickson) all descriptions of **BOILER and TANK RIVETS, WOOD BOREWS, SCREW BOLTS and NUTS, RAILWAY SPIKES, &c.**
Orders executed with despatch, and forwarded to all parts of the United Kingdom.

Transactions of Scientific Bodies.

MEETINGS IN THE ENSUING WEEK.			
SOCIETY.	PLACE OF MEETING.	DAY.	HOURS.
Westminster Medical	22, Sackville-street	Saturday	8 P.M.
Royal Asiatic	14, Grafton-street	Saturday	8 P.M.
Radical	11, Regent-street	Monday	8 P.M.
Chemical	Society of Arts, Adelphi	Monday	8 P.M.
Medical	Bolt-court, Fleet-street	Monday	8 P.M.
Linnean	Boho-square	Tuesday	8 P.M.
Horticultural	21, Regent-street	Tuesday	8 P.M.
Civil Engineers	25, Great George-street	Tuesday	8 P.M.
Society of Arts	Adelphi	Wednesday	8 P.M.
Microscopical	21, Regent-street	Wednesday	8 P.M.
Antiquaries	Somerset House	Thursday	8 P.M.
RL Society of Literature	4, St. Martin's-place	Thursday	8 P.M.
Medico-Botanical	33, Sackville-street	Thursday	8 P.M.
Royal Institution	Albemarle-street	Friday	8 P.M.
Botanical	Bedford-st., Covent-garden	Friday	8 P.M.
Royal Botanic	Regent's-park	Saturday	4 P.M.
Mathematical	Crispin-street, Spitalfields	Saturday	8 P.M.

GEOLOGICAL SOCIETY.

MARCH 12.—THE PRESIDENT (MR. HORSLEY) in the chair.

A communication was read by Prof. Sedgwick, "On the Comparative Classification of the Fossiliferous Strata of North Wales, with the Corresponding Deposits of Cumberland, Westmoreland, and Lancashire." The object of the author in this memoir was to give a general account of the Silurian rocks of the lake district of the north of England, comparing them with those of North Wales, so far as he had hitherto investigated the subject. In both there appears to be a series extending through the various members of the Silurian rocks. In the lake district, the lower Silurian rocks are imperfectly seen, and are not more than 300 or 400 feet thick, the Ash Gill beds being the highest, but the upper Silurians are admirably shown, and contain characteristic fossils. Of these latter, the Coniston limestone and the Coniston flags form an important group as much as 1200 or 1400 feet thick, and correspond with the Denbigh flags of North Wales, and the Wenlock shale and limestone of the Silurian system. The Ireth slate and grits succeed and occupy a considerable space, and must be of very great thickness. These higher beds, in Cumberland, abound with *Favosites* and *Strophomena*, but above them are remarkable bands with *Asteris*, while the whole upper portion is full of fossils, the prevailing type of which is Upper Ludlow.

INSTITUTION OF CIVIL ENGINEERS.

MARCH 11.—THE PRESIDENT (SIR JOHN KENNEDY) in the chair.

The discussion was renewed upon the relative merits of the screw and paddle-wheels as methods of propulsion, and was extended to so late a period that no papers could be read.—It was stated that the *Napoleon* screw steamer, in the French Post-office service, made on an average quicker voyages than any of the paddle-wheel steamers of the same power on the station; that in smooth water the latter vessels would make some way, but in rough weather the former was decidedly superior. The same result had been noticed with the *Archimedes*. When steaming down the river, she was frequently passed by merchant steamers, but by the time she had arrived at Dungeness, if there was any sea up, she had regained her place, and was ahead of the paddle-wheel steamers. It was thought, however, that with the feathering-paddles, invented by M. Cave, and equal power, the *Napoleon* would have done quite as good work as with the screw. The peculiarities of the steaming qualities of the *Rattler*, in spite of her bad build, were fully described. It appeared that in heavy weather, when sailing and steaming, and when it was thought that she was dragging the screw through the water, the dynamometer showed a very effective exertion of power, and that the slip was extremely small. That when the *Rattler* was obliged to shorten sail, because of losing speed by the heeling over of the paddles, the *Rattler* was enabled to use all her canvas and engine power together, and to gain way in the same proportion as the other vessels lost it. The general impression appeared to be, that the experiments were very satisfactory, and that if the *Rattler* had been a well-formed ship, and the power on board had been greater, the results would have been much better. A good adaptation of the screw was mentioned in the two schooners, the *Maryland* and *Senator*, built by Messrs. Pim, at Hull, and trading between that port and London. They were fine schooners of 242 tons burden, fully rigged, but having near the stern two engines, each of 14-horse power, connected by wheel work with a screw propeller. The result of a trial between the *Senator* and the *Shannon*, the latter being a regular paddle-wheel steamer of good power, was, that in the voyage between Dublin and London the *Senator* arrived in London only ten hours after the *Shannon*, having consumed only eighteen tons of coal, while the *Shannon* had used ninety tons; proving that for mercantile purposes, when extreme speed was not essential, but that punctuality was desirable, the screw propeller adapted to sailing-vessels was calculated to be of essential service.

A curious letter was read from Lady Benham, proving, by extracts from documents, that half a century ago, the late Sir Samuel Benham, to whom was intrusted the building of several men-of-war, was the originator of water-tight bulk-heads, dividing vessels into compartments for preventing accidents from leaks, and also for stiffening them. Sir Samuel was aware of the plan having been used by the ancients, and also that the Chinese use the plan now. He also invented the wrought iron water tanks, and the metal casks for storing the powder, both being fitted to the shape of the ship. The letter containing these interesting facts, was remarkable for the clearness of its expression, and for the accuracy of demonstration, when it was considered that it proceeded from a lady in her 75th year.—At the ballot for members the following gentlemen were elected:—John Hick, as a member; Messrs. R. W. Hamilton, W. Mitchell, T. Fairbairn, J. E. McConnell, J. T. Price, T. H. Wyatt, C. M. Jopling, D. Thomson, S. W. Smith, Captain J. Washington, R.N., and G. J. Villiam, as associates.

PROVINCIAL AND FOREIGN WATER-WORKS COMPANY.

Under this title a corporation has lately been established, comprising among its members men of unquestionable integrity and character, whose object is, in a great measure, to carry out the recommendations of the Commission of Inquiry into the Health of Towns, as regards a plentiful and cheap supply of water. The prospectus dilates on the great want now existing among all classes of our populous districts for this indispensable necessity; on its great advantages resulting from the promotion of salubrity, cleanliness, ventilation, drainage, health, and safety from fire; on the interest and duty of local communities to contract with companies for a sufficient supply for their districts, a duty mentioned by the Queen in her last Speech to Parliament, and which, in all probability, will be enforced by the Legislature. It adduces the instance of London and its suburbs receiving an ample supply from the various companies which are established there, all of which have overcome the engineering and other difficulties at first presenting themselves. For these reasons, coupled with the inability of resident parties, from want of capital or enterprise, of forming an association, they propose to establish a metropolitan company, and raise a capital for affording to provincial towns and cities, to the British colonies, and to various districts on the continent, the means of an abundant and constant supply of water; to be effected either by the erection of the works at the sole cost of the company, or by uniting with local associations on such terms as shall be mutually beneficial to the company and the province. The promoters argue, from the state of science, as connected with hydraulics and the process of filtration, that their undertaking is not only feasible but comparatively inexpensive; and as they anticipate the probability of a large supply being soon demanded for public baths and washing-houses, as well as for cleansing streets, scouring sewers, drains, &c., a hope is confidently held out of an average profit of 8 per cent.; meanwhile a capital of 500,000*l.* is to be raised by the issue of 10,000 shares, at 50*l.* each, on which a deposit of 1*l.* per share is to be paid on the allotment of the shares, and calls will be made as occasion may require. As regards the supply to our colonies and the continent, the prospectus reminds the public that the experiment is not new—gas having for some time been provided for various foreign countries by English metropolitan companies, and the results have proved as beneficial to the capitalists as to the districts.

SPRING SADDLE.—A most ingenious invention, and one in which all commercial men, and others connected with equestrian exercises of every kind, will find themselves interested, has just been patented by the inventor, Mr. Benecraft—a gentleman of fortune in the county of Devon, well known for his attachment to field sports, and his skill as a practical mechanic. This invention consists of three elastic springs introduced under the seat of the rider; one straight spring runs under the seat about four inches in height—the other two are in the form of arches, which are riveted to the straight spring transversely, and play freely on their metal plates on the sides of the saddle tree. A complete protection is secured to the spine of the horse, by means of the arched springs, which also transfer the rider's weight on the ribs of the horse—the seat of his greatest power—thereby enabling him to carry his burden with increased facility and speed. A single examination of the horse's back after hard riding will carry conviction, that these two important benefits are secured by the principles of Mr. Benecraft's invention. An intermediate action is created by the springs, doing away with the downright pressure, and placing the rider's weight gradually over the horse's ribs—thus preventing the possibility of undue pressure on any particular part; at the same time, affording a delightful elastic seat to the rider, and enabling him to hunt and take the longest journeys with much less fatigue than he had hitherto experienced. The Duke of Wellington, to whom the invention was submitted, saw at once the advantages of it; but his Grace was not satisfied by merely looking at the saddle, but resolved to test its efficacy, and, with his usual promptitude, ordered his horse to be saddled with one of them, forthwith mounted him, and, after having ridden for some time, expressed himself perfectly satisfied with the trial, and has since that time adopted these saddles in his stables. One of the saddles is placed in the gallery of the Royal Polytechnic Institution, and it has attracted the attention of a great number of noblemen and gentlemen, more particularly those fond of sporting, and cavalry officers.

Proceedings of Public Companies.

MEETINGS IN THE ENSUING WEEK.

TUESDAY.—South-Eastern Railway, at One—Western Australian Company, at Two.
WEDNESDAY.—Carn Bros Mining Company, at One.
THURSDAY.—Victoria Life Association, at One—Lincoln, York, and Leeds R.W., at One.

REAL DEL MONTE MINING COMPANY.

A meeting of the above company was held at the offices, Adelphi, on Monday, the 10th inst.—Sir ROBERT PRICE, Bart., in the chair.

The SECRETARY read the report, which contained matter of but little interest, the latest accounts from Mexico being those bearing date the beginning of November, 1844, the disturbed state of the country having prevented their receiving intelligence by the February mail; and the March packet, for some unexplained cause, having not yet come to hand. The last information they received was not of so favourable a nature as they could have desired; in many of their workings, operations had been materially retarded by the appearance of water, but in others the produce had been unusually great, and some soundings, which the company's officers had made, had evinced the presence of rich veins of metal, and lead to anticipations of prospective decided success.

The CHAIRMAN, having moved that the report be printed and circulated, intimated his readiness to answer any inquiry, and give the most explicit information.—A PROPRIETOR wished to know if experiments had been made, with a view of extending the operations of the company?—Mr. TAYLOR replied, that experiments had been made, and the most sanguine hopes were entertained of its ultimately proving advantageous; further than that it would not be wise to say.

Mr. TYRRELL observed, that having sent a circular to several shareholders, of the Bolanos and Real del Monte Companies, and only one out of 143 replies being in dissent of the opinions therein expressed, he trusted he should be excused troubling the meeting with a few words in explanation of his proposal. They had all just heard a report read, about the fortieth report hitherto produced, and what a series of contradictions did they not present.

At one time prospects of the most unbounded success—at another the tale of disappointment and hopelessness. Thus had the company continued on and on, without giving a halfpenny dividend to the shareholders, while it fed its directors at an extravagant rate; and, in conjunction with the Bolanos, kept up a staff of officers, without business to employ them. If they had business let them do it, and inform the proprietors who paid them, what were the duties they performed; but let them not be pretending to arduous tasks, receiving largely from the impoverished funds of the company, while one officer might be made to do the work of both associations, with economy and satisfaction. It was for this reason that he proposed, and earnestly submitted, a speedy and decided amalgamation of the companies. Again, where did the association meet?—in the manager's house; a company which they were told was the most extensive and elaborate in its operations of any of its kind, hired rooms from its servant! They had not even a house to themselves, the manager had his chambers on one floor, a strange company had been domiciled on another, the Bolanos inhabited a third, while they were kindly provided with a fourth. And for this accommodation—so centrally situated in the very heart of the city, so convenient for merchants—the two companies were paying 50*l.* each per annum! Really, the thing was monstrous; it required a thorough reform, and that reform he was determined to carry if he could. With reference to a rather uncourteous letter he had received from a gallant proprietor, Colonel Veitchell, in reply to his circular, he confessed he thought the statements therein contained were scarcely supported by facts. It was affirmed that the amalgamation of the two companies was impracticable, because illegal, but from that doctrine he, for one, must beg leave to dissent. His opinion was, that any meeting of shareholders could, by a vote of the majority, agree to any act not inconsistent with the Deed of Settlement; and believing not only the practicability, but the expediency, of employing that power in the present case, he would beg to hand in his circular letter, containing his various views and propositions.

The CHAIRMAN intimated that such a course was, to say the least of it, informal; the proprietor must shape his suggestions in some more comprehensive and tangible manner; no motion had been made, though a long speech had been delivered, and he reminded the hon. gentleman of the propriety of adopting a more regular line of proceeding.

Mr. TYRRELL made one or two suggestions, in order to meet the views of the chairman, but eventually the question was discussed, without any specific resolution being either framed or put before the meeting.

Mr. WILSON considered the proposition of Mr. Tyrrell as nothing short of a dissolution of the company, and not being prepared to favour any such sweeping course, he should oppose the subject of the letter altogether.

The CHAIRMAN observed, that the directors had not lost sight of the possibility of such a plan as that now broached by Mr. Tyrrell. They had more than once given it their most anxious consideration, and had unanimously come to the opinion that it was wholly impracticable; they had studied also, economy in the conduct of the company; they had devised and matured, and frequently carried out, methods for retrenchment, and even now, perhaps, some trifling saving might possibly be effected; and, if so, none would be more ready to acknowledge or perform it than the board of their directors. But the project of Mr. Tyrrell appeared to him to resolve itself into three distinct propositions:—1st, whether a manager was necessary for the furtherance of their objects? 2d, whether the offices should be removed into the city? and, 3d, whether the manager, secretary, and clerks, of the Real del Monte and Bolanos should not be the same, and their duties concentrated and performed by the one set of officers? With respect to the last proposition, the experiment of amalgamation was not new, it had been made before; and, after struggling for many years under the disadvantages of but one staff of officers, in 1829 the perplexity arising from the accounts and papers being kept together, and by the same clerks and secretary, was found to militate so greatly against its prosperity, that the company, acting under the recommendation of a committee appointed to report on the subject, separated, by formal motion, the affairs and conduct of the companies. As to the removal of their manager, Mr. Taylor, their deed did not allow of his removal. Mr. Taylor had been one of the original partners in the formation of the company—had become associated with its every project—and might fairly claim a large indemnity for the injury he would sustain by being removed. He had signed all the agreements; as an eminent man he had been made a party to every instrument and transaction of the company; and, putting aside the inexpediency of dismissing him from a situation which he filled with honour to himself, and advantage to the association, it was out of the power of the proprietary to do so. But, moreover, the secretary and under-secretary would be wholly incapable of doing the duties of both companies; and it was the opinion of the directors that any trivial saving effected by the discharge of an officer or two, would be dearly purchased by the loss they must inevitably sustain. He considered it most extraordinary conduct, for a gentleman perfectly ignorant of mines, and all accounts of that company, to think he knew better than those who had devoted all their time and energies to it. How ridiculously ignorant had the proprietor shown himself on the subject of removing their offices into the city; if he seriously believed that a suite of three or four rooms could be got in the city for 55*l.* a year, he must know very little of the price of property there. But, if such a step as removal into that quarter had ever been anticipated, the present board of directors ought not to have been elected. To most of them it would be highly inconvenient to attend daily in the city, and to their indefatigable conductor, Mr. W., it would be wholly impossible. As to the salary of directors, for some long time no salary at all was taken, though he did not think that by any means a prudent step, as men could not be expected to feel the responsibility of attending regularly to the duties thus imposed, unless an adequate remuneration was accorded them. There was no profit, said the hon. proprietor—now, there was a considerable profit, and the disbursements of the company attested at once their resources, and the arduous duties of the directors. The expenditure of the one company (the Real del Monte) was 320,000*l.*; and that of the two bodies united amounted to upwards of half a million; and the disposition of such enormous property, larger almost than any mining company in the world, was entrusted to the board of directors; and for all their care,

anxiety, and services, a remuneration of 50*l.* forthwith, was proposed!—a proposition so absurd, so wholly unprecedented, he never knew. With respect to the reduction of clerks, all the anxiety seemed to be to dismiss one clerk; the saving by such a step would be but very insignificant; the step itself was scarcely possible, but, if so, the complexity that must necessarily arise in the accounts, would do more than cancel any economy that might be effected. But, besides, how could they answer for the willingness of the other company to make one officer perform the work of both? Only one-fifth of the Real del Monte belonged to the Bolanos, and who could say that they would consent to have their secretary dismissed, and another thrust upon them; or that, if retained, he should do the business of another distinct body? They might as well be told that the secretaryship of the United Mexican and their own might be amalgamated; it was just as reasonable, and certainly equally as practicable. If Mr. Tyrrell's argument was worth anything, it must go to this—let one general amalgamation take place of all the secretaries of all the mining companies—United Mexican, Mexican, Real del Monte, Brazilian, and Bolanos!—Not such an idea was absurd in itself, and untenable in the abstract. Without at all despising small savings, and while they should never be averse to any proposition that would conduce to the economy, as well as the safety, of the company, the board of directors could not but think that the substance of the circular was detrimental to their interest, and absolutely impracticable in its theory and effect.

Mr. WILSON thought that, after the admirable explanation of the chairman, no one could dispute the impossibility of Mr. Tyrrell's suggestions.

Mr. TYRRELL replied that his assertions were supported by facts—those of the chairman were destitute of such confirmation. In the first place, that gentleman had said that the amalgamation of the company would be illegal, now—The CHAIRMAN apologised for interrupting the hon. proprietor, but would suggest the advisability of hearing the opinion of their solicitor on that point.—The SOLICITOR observed that the Deed of Settlement, while it gave the power of dissolution, conferred no authority for amalgamation.

A PROPRIETOR inquired whether the company was empowered to remove its manager?—The SOLICITOR replied that there was no clause which gave that power, although there was one which enacted that, in the event of "the death, removal, or resignation of the manager, the directors should elect another."—Several proprietors considered that that implied the right of the company to remove that officer, in case of their wishing it, though they all disavowed any such feeling on their parts.

Mr. T. was explained that Mr. Taylor was not to be regarded in the light of a servant, but a partner, and he could not be removed from his salary; true, he might be told that his services were not required, but neither in equity nor at common law would it be tolerated that he should be deprived of his salary, which, or an equivalent indemnification, was his undoubted right.—Mr. TYRRELL disagreed altogether in the law, as propounded by their chairman, solicitor, and counsel. The deed that gave them the power to dissolve, gave them the power to amalgamate, and, as he stated before, he was firmly convinced that any resolution passed by a majority of any meeting, if not in opposition to their charter, was valid and binding. However, he would not, at that opportunity, discuss the point, nor press the subject of his proposition, but he (Mr. Tyrrell) would postpone any definite motion till their next meeting, and, in the meantime, would take the sense of other proprietors on the advisability of his suggestions.

The CHAIRMAN protested against this delay; the motion, which was virtually a vote of want of confidence in the directors, ought at once to be put to the question, and decided one way or the other.—Mr. W. scouted the idea of giving the directors, who had the control of half a million of money, the salary of a junior clerk; and as to dispensing with the services of Mr. Taylor, whom he regarded as the most accomplished scientific gentleman that had appeared for many years, it would be the most absurd idea ever contemplated, especially at a time when he confidently believed the state of Mexico was such as to hold out the most advantageous prospects, to deprive themselves of his services, would be, he considered, to commit nothing short of an act of suicide.

Sir W. FREEMANTLE stated that in consequence of the receipt of the circular, he had attended the meeting to gain some information, as the proposition of Mr. Tyrrell certainly staggered him, and he deemed it right, at least, to become well informed; and now, after having heard an explanation from the chair, the most full, fair, and satisfactory, he avowed his belief that the proposition was impracticable and absurd; and, as an implied censure on the board of directors, he should give it his strenuous opposition, and to render his vote the more effectual, he would move, as a resolution.—That the fullest confidence is reposed by the proprietors in the ability and integrity of the board of directors, and is hereby tendered them.—Colonel VEITCHELL having seconded the motion, it was put from the chair, and carried unanimously, with the exception of one proprietor, who agreed with the substance, but differed on the principle, of the resolution; Mr. Tyrrell voting for the motion.—A vote of thanks having been given the chairman and the directors, the meeting separated.

BOLANOS MINING COMPANY.

A meeting was held on Monday last, immediately after the separation of the Real del Monte Company, for the election of a director, when Mr. Eade having been unanimously elected, the CHAIRMAN (Sir Robert Price, Bart.) called on the manager (Mr. Taylor) to read the report, which announced that the various works were proceeding with alacrity, and with every apparent prospect of ultimate success; being of very remote date, the intelligence contained no point of interest.—The report was adopted unanimously, and without discussion; and the meeting separated.

WHEEL NORRIS MINING COMPANY.

A general meeting of the shareholders in this company was held at the White Hart Hotel, Lancaster, on Friday, the 7th instant.

WILLIAM MAY, Esq., in the chair.

After confirming the minutes of the last meeting, auditing, and passing the accounts, the CHAIRMAN called upon the agent to read the

REPORT.

The directors, in laying the report of their proceedings before the shareholders, have two objects in view—that of drawing attention to past operations and discoveries, and also to the plan which seemed most conducive to the welfare of the concern. You are, doubtless, aware, that our early operations were directed to exploring the seat, in order to discover the number and nature of the numerous lodes it contains; and we have much pleasure in informing the meeting, that we have discovered ten lodes, varying in width from one to four feet, some of them producing fine stones of copper ore, with fluor, and other indications characteristic of riches in the district—or, in other words, composed of matters analogous to the lodes of South and West Canada near the surface. On one of these lodes, the character and situation of which seem to indicate it to be the main lode of the above-mentioned mines, and which we have here denominated the "South Lode," we have sunk a shaft sixteen fathoms, and opened at that level a few fathoms on its course; we find the lode of good width, and it is considered by practical men who have inspected it of a highly promising nature. At this point, however, we were prevented from carrying out the work, in consequence of the water. Within a short distance of the south lode are four others, all of which we can conveniently develop by one shaft. These cheering prospects forcibly impressed us with the propriety of at once beginning to sink a new engine-shaft, and with the advice and concurrence of some of the principal shareholders, this work has been commenced, and we have been favoured with the opinions of several agents in the vicinity respecting the site of a weighty undertaking. This shaft, which is now eight fathoms deep, is designed to intersect the south lode sixty fathoms below the surface, and by cross-cuts from it we can conveniently explore five lodes which are situated in this part of the seat. We think a vigorous prosecution of this work indispensable; and, to facilitate our progress, we are erecting a horse-wheel to draw the water and stuff, which we expect to complete in a few days. We have erected a small counting-house and smith's shop, and are losing no time in getting the necessary matters in order to carry on our operations in a minicircle system.

We must now look to the future—and, in doing so, our attention is naturally directed to the erection of a steam-engine, to enable us to prove the mine, the size of which we now submit for your consideration. We have carefully investigated the details of the question, and found that a 22-inch cylinder engine would drain the mine to the depth of from 90 to 100 fathoms, which would be sufficiently deep to ascertain what the ultimate resources would likely be, and, should our expectations be realised, such an engine would be of suitable power to convert, for the purpose of drawing stuff, stamping, crushing, &c., when one more powerful may be required for pumping. In order to arrive at a fair conclusion as to the cost of such a machine, with the necessary buildings, and other matters connected with it, we have entered into very elaborate calculations, which we now submit before you, as well as obtained an estimate of it, from an eminent engineer, Mr. William West, of Fowey Consols, and find it would be about 1011*l.*; to this sum we should add 200*l.*, about the sum required to prosecute the engine-shaft whilst the engine may be getting in order. It appears clear, therefore, we should now make a call of 5*l.* per share to cover the whole expenses of erecting the engine, and set the mine in proper working order. Our confidence remains unabated respecting the successful issue of the mine, and we beg to assure the shareholders, that, in carrying out the objects in view, nothing shall be wanting on our parts to use the utmost economy and perseverance, consistently with the rules of good mining.

After the above report had been read, an animated conversation took place respecting the adoption of the suggestion therein contained, when it was unanimously agreed to forthwith erect a 22-inch cylinder steam-engine, and a call of 5*l.* per 256th share was made—the parties expressing their approbation of the manner in which the concern had been conducted, as well as their entire confidence in the ultimate success of their undertaking.

SAMBRE AND MEUSE RAILWAY.

A very numerous meeting of the proprietors of this company was held at the London Tavern, on Tuesday, the 11th inst.

W. P. RICHARDS, Esq., in the chair.

The CHAIRMAN congratulated the shareholders on the success which had attended their efforts before the Belgian Chambers, and trusted that other anticipations equally as confident as those they entertained from the first on the issue of their appeal, would be similarly realised. For the present, he would abstain from any further remark, and without other comment, call on the secretary to read the usual report.

Mr. JONES (the secretary) accordingly submitted to the meeting a very clear and comprehensive statement of the position and circumstances of the company, from which it appeared, that the concession of the line, after several protracted delays, having received the sanction of the Chambers, and the royal assent, only remained to be presented to the shareholders. The prospectus issued by the directors in May, 1844, stipulated certain conditions anticipated from the Belgian Chambers; one being that the Government would guarantee to the shareholders a minimum rate of interest of four per cent., the cost of the works for forty-six years; the subscription to the works being contingent to the ratification of this guarantee; powers at the same time being given to the directors to make other arrangements relative to these terms. The board, therefore, felt that they might, in perfect union with their duty, have completed any step they deemed advisable without consulting the shareholders; but, as a material alteration in the original conditions had been agreed on, they resolved to submit the final proposition for their approval, giving them the option of withdrawing from the enterprise. The guarantee had not been granted; but other terms equally favourable had been conceded. The Minister of Public Works had been invariably favourable to the proposal, considering it a sound line of policy, and likely to be crowned with success. Two deputations that had been appointed to proceed to Brussels, had received the warmest assurances of the support of the Government; but subsequently, a strong feeling arose among the Deputies, on the principle of establishing a precedent which might hereafter be a source of great inconvenience, if not danger. The project, however, appeared to the Minister of sufficient importance to induce him to propose a method of meeting the objection, and removing all opposition. These modifications were accepted by the deputation, and are as follows:—On the one hand, the guarantee of interest is abandoned by the company; and on the other, the Government waives its reserved right to repurchase the railway at the end of forty-seven years, and concedes the grant absolutely for ninety years. The company have also obtained the power of altering the line, without reference to the deviation limits in the original contract, and to use such curves and gradients as they may think expedient, provided only they be consistent with regularity, security, and speed. They have also obtained the power of making certain specified extensions, which they consider requisite for the full development of the scheme; and have, moreover, procured the pre-option of making any additional lines of railways which may be necessary for further supplying the wants of the district of l'Entre Sambre et Meuse; and have thus, by the abandonment of a condition not essentially material, and to which they firmly believe that they never would have had any occasion to resort, obtained great, permanent, and substantial advantages.

The CHAIRMAN briefly stated, that the opposition to the guarantee was so decided amongst numerous members of the Chamber of Deputies, that it was useless to hope to resist it, and he, therefore, felt that the concessions granted in lieu of the guarantee were to be considered as valuable acquisitions to the powers of the company. He thought he could not better describe the position and prospects of the company than by reading the engineer's report—which stated, that the direct main line from Charleroi to Vienna was about forty miles, and the branches through the richest mineral districts more than sixteen, making in all, about sixty miles of rail. The cost, including all the works, the requisite plans, &c., is estimated at 539,000. With reference to the mineral traffic, the average of the last seven years has been taken, and the result is eminently successful, more particularly as regards the coal trade. Mr. Sopwith, after carefully examining the statistical documents, and obtaining detailed information from the best sources throughout the district, has accordingly made such additions as are consistent with his experience of similar cases in various parts of the kingdom, and more especially in the extensive mining districts in Northumberland and Durham, and in the Dean Forest and South Wales. In a country almost destitute of good roads, the impulse given to travelling by means of railway must undoubtedly be very great; care, however, has been taken to avoid every source of income which is not clearly indicated by the existing statistics of the country. The passenger traffic is, therefore, only estimated at little more than 7,000,000 per annum, or about 20¢ a day, an amount which will doubtless be greatly exceeded, especially when communications are extended from the Sambre and Meuse Railway towards the interior of France, leading to Paris on the one hand, and towards Switzerland on the other. The arrangements for such extended railways are already in progress, and there is every reason to anticipate a speedy completion of them.

The district of the Sambre and Meuse bears a considerable resemblance to the mining districts of the north of England, where the modern system of railway communication was first brought into operation by the founder of locomotive travelling, George Stephenson, Esq. The vicinity of Charleroi, abounding with extensive collieries, iron works, glass houses, and other manufacturing establishments, presents on a less scale the same features which are so conspicuous on the banks of the Tyne near Newcastle. The central parts of the district of the Sambre and Meuse contain vast deposits of iron ores, with abundance of building stone, and a great variety of beautiful marbles; and further south are slate works, which are extremely valuable even now, but will be much more so when rendered more accessible by railways.

The district is, therefore, replete with all the elements of an extensive traffic, and the coal and iron being situated in different and distant localities, naturally increases the necessity for improved means of communication, as the one of those materials must be transported to the other. The coal field near Charleroi is the most important in Belgium; its produce amounted in 1842 to 1,139,168 tons of 1000 kilogrammes each. There are forty beds or seams of coal now being worked, and varying in thickness from one to four feet. The recent progress of the coal trade during the last fourteen years shows a steady increase from about 400,000 tons in 1829 to 520,000 tons in 1833, 750,000 tons in 1837, 930,000 tons in 1840, and 1,130,000 tons in 1842. The coal of Charleroi, besides the home consumption, supplies Brussels and the Flanders, the banks of the Meuse from Namur to Sedan, the entire department of the Ardennes, and others to the amount of a million and a half persons. At present the expense of carriage is such as to amount to an absolute prohibition in places distant from the mines. Notwithstanding these disadvantages, however, the mines of Charleroi and of the coal fields immediately adjacent, now produce about 3,000,000 tons, a quantity equal to one-tenth of the coal raised in Great Britain. Independently of the great advantages to be derived from connecting the coal and iron districts, and from opening out the vast stores of the extensive forests traversed by the line. It will afford the benefit of locomotive travelling in a thickly populated country; it will also furnish the agricultural districts with coal for burning lime, an object alike important for the interests of the country and the railway. By means of this railway, a cheap, safe, rapid, and uninterrupted communication from Charleroi to Vireux will supersede the costly, dangerous, and frequently interrupted, navigation by which coals are now conveyed. It is, in fact, the substitution of a railway on one side of a triangle, in place of navigating the other two sides; the distance between the termini being 40½ miles by the rail, and 78½ by the river. The quantity of coal now exported from Charleroi into France, by way of Vireux, amounts to 100,000 tons. Not only will the cost of carriage be reduced from four to five francs per ton, but a degree of regularity in transit, and consequent constant supply, would relieve the manufacturers of the Ardennes from the fluctuations of which they now complain, and by which the price of coal is materially enhanced; so that coal, which at Charleroi cost under eleven francs per ton, is occasionally sold at from sixty to seventy. The cost of working the line is estimated at 37,794,118.4d., and the gross receipts at 94,461,88.5d.—the latter including 17,361,7 for iron ore conveyed from the mines to the several iron works of the district, and 2,988,4 for pig and wrought iron manufactured in the district, and conveyed on the railway. This report had been drawn up by Mr. Cubitt and Mr. Thomas Sopwith, both men as eminent for their integrity as their talent. The most implicit confidence might therefore be placed in it. The chairman, in conclusion, observed that the line of rail was altogether in the Belgian territory, with the exception of about a mile and a half in the French territory; it, therefore, was necessary to obtain the permission of the French minister of works. Since the meet-

ing had assembled in that room, that assent had been received, and thus the only remaining sanction to authorise their proceedings, had been accorded and accepted. This circumstance was one of additional congratulation, and would, he trusted, be followed up by the steady and permanent success of their undertaking. He concluded by moving that the report be printed and circulated, which, being passed, with other resolutions, merely embodying the substance and recommendations of the report, the meeting separated.

LONDON AND BRIGHTON RAILWAY.

A limited number of the holders of loan notes of the London and Brighton Railway Company, having, through inadvertence, omitted to give notice on the 17th of February, of their intention to convert the notes into shares, and being, on subsequent application, refused the liberty of doing so, met at the London Tavern, on Wednesday, the 12th inst., to consider the course most expedient for them to adopt.—Sir ISAAC LYON GOLDSMID, Bart., on taking the chair, observed, that being himself situated in the same predicament as the gentlemen present, he had taken upon himself the responsibility of convening the present meeting. He considered that the company ought not to have stood by the strict technicalities of the law; but have acted uprightly, as man towards man, and not, because one or two gentlemen had inadvertently forgotten to exchange their loan notes, to exclude them from what might, in justice, be termed their right. It could not be said that gentlemen, so situated, had omitted to apply in expectation of a rise in the market, since the advance on the loan notes had been about 40%, while on the day on which the notice should have been made, the prices of shares were 51%. Besides, whatever might be said of the inability or illegality of any proceedings to remedy the inconvenience, they had precedents for the step. Gentlemen might remember that, though Government bonds were nominally forfeited, if not properly negotiated at the appointed day, yet, for a guinea or so, any person, who had inadvertently omitted to comply with the usual requisitions, could recover all the advantages, which, strictly speaking, he had forfeited. In Exchequer bills, too, the Government, in a late case, had admitted the plea of unintentional forgetfulness; and, making a trifling reduction for interest, had accorded the party all that would have been his indisputable title, had not his negligence interposed. Besides, the loan note holders had seen no advertisement, or other notification, reminding them of the day limited for application: indeed, he had heard that publicity of the requirements had been suggested; but reply was made that it would be all the better for the company, if holders should forget to apply, and that the loss of one would be gain to the other. Surely, such a line of unfairness and illiberality, was not worthy of so respectable a company: true, they might gain by the misfortune of others, something about 25,000; but could they consider themselves justified in adopting a course so equivocal—and, to say the least of it, bearing so hard upon share and loan holders?—Feeling strongly himself upon the subject, he would submit to the meeting a motion, that a general meeting of the shareholders be convened, to consider the propriety of allowing such members, who, through inadvertence, had omitted to make application on the appointed day, to exchange their notes for shares; and, in the event of its being objected that the Act of Parliament conferred no power on the company to take such a step, to apply to Parliament for another act to meet the case.—These propositions were unanimously carried, and the meeting separated.

CAMBRIDGE AND LINCOLN RAILWAY.

A meeting of shareholders in this line was held at the George and Vulture Tavern, on Monday, the 10th instant. The shareholders were attracted to the place in consequence of an advertisement calling them together to consider the alleged difficult position in which the company was placed.—After waiting an hour, Mr. Ald. VICKERS (of Sheffield), the projector of the line, thought, if no party appeared to act in compliance with the advertisement, stating the company to be in difficulty, he thought those shareholders present ought not to separate without marking their sense of the disgraceful conduct of the concertors of the advertisement.—It being about two o'clock, and a number of shareholders present, it was moved and seconded, that E. S. KENNEDY, Esq., take the chair.—Mr. Ald. VICKERS stated, that finding no one knew of the meeting at the Tavern, he sent to hire the room, in case no person connected with the advertisement should do so; if they did, his money was to be returned. As the projector of the line, he had attended to see what were the "difficulties," like many of those present; he had too high opinion of the opponents of this line to think such a disgraceful trick had proceeded from them—he, therefore, attributed the hoax to some person interested in stock jobbing. He then explained the advantages of the Cambridge and Lincoln line, and its superiority over all its competitors. He also alluded to the benefits which would follow from the completion of the Lincoln, York, and Leeds, and the Goole line—which, together, would bring a coal traffic of at least 160,000,000 a-year, and bring the price of coal down to a guinea a ton in the metropolis. In conclusion, he expressed his confidence that Parliament would consider the expediency of supporting this railway as the route to York, so much of the line being already completed in that direction.—A strong resolution was then moved by Mr. SEANMORFORTH (of Sheffield), condemning the disgraceful trick on the part of the concertors of the advertisement, and expressing the unabated confidence of the shareholders in the superiority of the undertaking.—A *pro forma* vote of thanks, moved by Mr. Ald. VICKERS, and seconded by Capt. COUSENS, was then passed to the chairman, when the meeting separated.

WEST LONDON RAILWAY.

The half-yearly meeting of this company was held on Wednesday, the 12th inst., at the office, Abchurch-lane, City, and was rather numerously attended. The chair was taken by H. H. GROUND, Esq.—The CHAIRMAN alluded to the successful arrangement with the Birmingham Company, which, he hoped, would be equally satisfactory to the proprietors. They had agreed to pay them a sum of 60,000, without making any deductions; beyond which they had allowed them, most liberally, all the use and benefit of the Kensington Canal; the Birmingham Company also allowed them to estimate the toll levied on their own line 50 per cent. higher than the rates charged by the London and Birmingham Company. He hoped the arrangement would be equally as satisfactory to the proprietors as it was to the directors themselves.

A report was read by Mr. THOMSON (the secretary), by which it further appeared, that the money would be returned to the Knightsbridge as well as to the Thames Extension shareholders. From the balance-sheet it appeared that the total receipts of the company were 210,247, the half-yearly receipts being 84,521.10s. 6d., out of which amount 1714 6s. was from the canal tollage, and 74,158.8d. was the toll from the railway. The expenditure for the half-year was 88,811.1s. 11d.

In answer to Mr. RIGBY, the SECRETARY said, the Birmingham Company, besides the canal, excepted also the tongue of land, which was another advantage.—Mr. WHITE moved the adoption of the report, which was seconded by Mr. RAMSAY, and passed unanimously.—The SECRETARY, in answer to Mr. RIGBY, said, the company did not guarantee, but only gave them one-fourth of the gross profits; the 60,000, was also to satisfy the debts on the canal. The admitted debts amounted to about 3500.—Mr. BURGE thought the arrangement very satisfactory to the proprietors, and it was liberal on the part of the Birmingham Company to allow them to retain the Kensington Canal, which had cost them upwards of 30,000.—Three directors were then re-elected, when a vote of thanks was passed to the board of directors, on the motion of Mr. WHITE, seconded by Mr. GUNTER, and passed unanimously.

The meeting was then made special, for the forfeiting of 969 shares.—In answer to Mr. WHITE, the SECRETARY said, the parties had received notice for these twelve months, and that 6s. was the highest amount paid on them.—Some observations were made by Mr. WILTCURCH, who alone seemed to disapprove of the general conduct of the directors, when the resolution was passed unanimously.—After a vote of thanks to the chairman, the meeting adjourned.

LONDON AND DUBLIN BANK.

The first annual meeting of this bank was held at the London Tavern, on Tuesday, the 11th inst. Amongst the directors we noticed the Earl of Mountcashel, Sir Ralph Howard, Bart., M.P., and Charles B. Baldwin, Esq., M.P.—The chair was taken by Sir RALPH HOWARD, Bart., who briefly addressed the meeting on the success of the bank.—The report was then read by Mr. PIERROT (the secretary), from which it appeared that an arrangement had been made with the Bank of Ireland, which was expected to be equally beneficial to both parties. The gross profits for the year were 6809, 0s. 5d., and the total expenditure was 4528, 18s. 8d.—leaving a surplus of 2286, 10s. 7d., out of which a dividend, amounting to 599, was paid in June, and now the proposed dividend (703), being at the rate of 4 per cent. per annum, and leaving a balance of 1003, 5s. 9d. The preliminary expenses were 6664, 2s. 10d., and the assets were 179,673, 16s. 9d. Branches were now established at Dublin, Dundalk, Wicklow, Mullingar, Parsonstown, Kells, and Carrick, and another was since established at Carrickmacross. The report concluded, by an expectation that the advantages to be derived from the arrangement with the Bank of Ireland, and the inquiry that was looked for into the joint-stock banking system of Ireland, would be the means of greatly advancing the interest of this bank.—The Earl of MOUNTCASHEL moved the adoption of the report, and explained the reason why he joined the bank, which was from the paucity of banks in Ireland, and the great want of such establishments for the commerce and trade of that country. During his speech he mentioned the number of banks in each part of the United Kingdom, exclusive of London—in England, the number was 1030; in Wales, 69; in Scotland, 337; and in Ireland it was 161. He concluded, by promising his continual support to the institution, as he considered it one essential thing to the prosperity of the commercial and trading interests of his own country.—Mr. BALDWIN, M.P., seconded the motion, and accounted for the small attendance, from the fact of three fifths of the proprietary being Irishmen.—The report was adopted.—The meeting was also addressed by Mr. TWILLEN, Mr. SMYTHE, Capt. HAINES, and Mr. LAKE.—Messrs. Biddulph, Lloyd, and Stone, were re-elected auditors.—A vote of thanks was unanimously passed to the Earl of Mountcashel, and the other honorary directors, and also to the directors of the company, for whose services 6000, was awarded as

a remuneration.—A vote of thanks was passed to the secretary and inspector of branches.—On the motion of Mr. F. C. BROWN, seconded by Mr. I. CHAPMAN, a vote of thanks was passed to the chairman; when the meeting separated.

NEW BRUNSWICK AND NOVA SCOTIA LAND COMPANY.

The annual meeting of this company was appointed to be held at the George and Vulture Tavern, Cornhill, on Thursday, 13th inst.; but owing to a sufficient number of proprietors not being present, it was adjourned till Thursday, the 10th of April.—The chair was taken by JOHN MOXON, Esq.—Before the resolution was passed adjourning the meeting, a conversation took place, during which the CHAIRMAN said, that their act limited them to half an hour's grace for the proprietors to attend the meeting after the hour mentioned; and he thought as but twelve only were then present, when there ought to be fifteen proprietors at least, some remuneration should in future be given to those proprietors who attended, as was the case with the Equitable, where he understood they gave 2s. 6d. to each of those who attended the meeting, which was *pro tanto* useful towards cab or coach hire, and though small, acted as an inducement to many.—Mr. A. Hankey, Mr. Smith, Mr. Bruce, and some others, advocated the printing of the report for the use of the proprietors before the next meeting.—The CHAIRMAN, after some consideration, agreed to the suggestion, and said, as the report could not be read at that meeting, he could only give a general idea of it, which was, that both as to their general and financial condition, it was much more promising.—On the motion of Mr. A. Hankey, seconded by Mr. Smith, the meeting was then adjourned to the 10th of April.

ROYAL NORTH OF SPAIN RAILWAY.

The prospectus of this company will be found inserted in our advertising columns, and having taken some pains to acquire information beyond that conveyed through such medium, we may observe, that the statistics presented to us, show the proposed line to hold out advantages which can, perhaps, only be duly appreciated by those who possess a knowledge of the country, and, at the same time, take into consideration the increased traffic, which facilities of transit, both as regards economy of time and money, as evidenced in the construction of lines of railway in this country, of which the weekly returns afford conclusive evidence, when compared with those of the preceding year, and more especially when in many cases we find, that where no traffic existed which would justify the establishment of an additional mode of conveyance, the expenditure of tens of thousands, in the formation of a line of railway, has been attended with returns such as to afford an ample revenue to the shareholders. If, indeed, it were necessary to adduce any one instance of this nature, we would refer to Ireland, where, certainly, if judgment is to be formed merely from the present conveyance or modes of transit, the returns would be trifling indeed; but the investigation and reports of parties, on whom devolved the duty of eliciting correct data, sufficiently proves, that with a vast population, and a surplus produce, or the means of increase, were markets found, or facilities afforded for its transmission to other more distant parts, there can be no doubt as to the result. If, again, we arrive closer home, and take Cornwall, we find that one or two coach conveyances are found to be ample for the purpose—indeed, on the proposed Central Line, we believe the two mails alone afford accommodation to the traveller, yet hundreds of thousands were proposed to be embarked to facilitate communication, and prospects held out to the shareholders of remunerative returns for the capital employed. The South, or Coast Line, which will be now carried out, gives, in the estimate of returns data which prove that a large population will derive the advantages which attend locomotive communication, and that the produce of the farmer and the manufacturer will meet with a more ready market, while the interest to be derived by the merchant—and not the least important, in our consideration, that of the miner—will be enhanced to an extent which could hardly have been contemplated before the introduction of this mode of communication.

We have said thus much on railways generally, because it might be considered that the district through which the proposed line, from Aviles to Leon, is contemplated, being the first section of the trunk or main line from the Bay of Biscay to Madrid, was not sufficiently populated, or was connected with manufactures or agricultural produce, which would warrant so considerable an outlay as that contemplated. It is, then, to meet such assumption on the part of those who may be ignorant of the advantages which the line presents, that we are induced to enter upon the subject at any length.

The magnitude of the undertaking may be estimated, when it is stated that it is proposed to form one uninterrupted line of communication between the Atlantic and the Mediterranean, the present line being from Aviles to Madrid, when it joins that now in the course of formation from the port of Alicante, thus crossing the country and making the capital easily accessible from either side. The advantages to be derived from the transit of coal and iron, with which the Asturias abounds, as well as the agricultural produce of the province of Leon, may be readily estimated by those who will consult the statistics of the country, from which we find that the quantity of coal estimated to be produced from the Asturian district, including the collieries of Santa Fermo Ferrones, La Espada, and those possessed by the Asturian Mining Company, with others of less magnitude, give a produce of nearly 300,000 tons per annum, the revenue from which may be estimated at upwards of 60,000—the coal being transported via Aviles to the ports of Santander, Bilbao, Coruna, and Vigo, on the north coast, and to Bayonne, Bordeaux, as also to the *free* ports of Havre and Nantes.

The estimate of the population on the line is taken at 4,500,000, and while in England the proportion of 2 to 4 per cent. is taken, in the present instance, only 50, or 1 per cent., is the basis of the calculation of returns on the capital employed. It is unnecessary for us to enter further into detail, as the prospectus presents the main features of the project, and the contemplated advantages, whereby it will be seen that a revenue, or net return, of 14 per cent. is calculated upon; by the several estimates having been submitted to Mr. Robert Stephenson and Mr. J. M. Rendel, the latter gentleman acting as engineer to the company—the plans and sections, as well as the calculations, having, we believe, been made by Messrs. Manby Brothers, who will take an active part in the construction of the line. The prospectus presents a host of names as patrons in Spain, among whom many will be recognised as holding important positions as connected with the Government, as well as being large capitalists, and one-third of the capital having been subscribed for in that country, augurs well for the success of the project.

HAILEY RAILWAY.—As we announced in last week's Journal, the meeting, convened for Friday, was adjourned, to afford time for the progress before Parliament of the West Cornwall Railway bill, the promoters of which have entered into a provisional arrangement with the Hailey Railway Company, by which it is proposed that the latter should engage to take a lease of the new railway, securing 4 per cent. per annum on the capital, with an equal division of surplus profits. The road traffic has been subjected to accurate observation, and the entire line from Truro to Penzance (including the present receipts of the Hailey Railway) will produce a revenue of 49,000; deducting from this the working expenses, at the usual rate of 40 per cent., the net return on the whole line from Truro to Penzance will be 29,400, per annum, leaving an annual sum of 18,300, to be divided upon 180,000. The Hailey Railway, incorporated by Act of Parliament in 1834, passes through a portion of this district; but the accommodation it affords, especially to passengers, is at present imperfect, and the traffic below that which a more extensive measure would ensure. The proposed Cornwall Railway will unite with this line between Truro and Falmouth, and consequently increase the traffic. The present traffic between Hailey and Penzance amounts annually in passengers to about 6300; in goods to about 14,700; Hailey and Penzance 21,000. The present traffic between Redruth and Truro amounts annually in passengers to about 6000; in goods to about 11,000; Redruth and Truro 17,000. The present gross traffic on the Hailey Railway (between Hailey and Redruth) amounts annually in passengers and goods to about 11,000.—Total of the whole line, 49,000.

MONSTER ENGINE.—There is now erecting at Newmans Iron-Works, near Wigan, the property of the Coltness Iron Company, an engine of the high-pressure kind, of the largest dimensions, we believe, in the country. For the satisfaction of those interested in machinery, we subjoin the following particulars, to give some idea of its enormous size:—The pedestal on which it stands are composed of 1900 tons of solid mason-work; it has a high-pressure cylinder, 54 inches diameter, 9 feet stroke, with nozzles, and weighs 10 tons; with blowing cylinder, 122 inches diameter, 9 feet stroke, with top and bottom nozzles, and weighs 36 tons. The beam weighs 81 tons, and measures 86 feet long, with 6 feet beams in centres; the connecting-rod works from the end of the beam, and gives a stroke of 12 feet, and 14 strokes per minute. The working part is supported on two columns and entablatures, weighing 22½ tons. The fly-wheel is 30 feet diameter, crank shaft, 15½ inches at journals, and weighs 35 tons, works at double beat valves, with steam pipes 21 inches diameter. All the parts are made to sustain 60 lbs. on each square inch of the piston; it is intended to blow ten furnaces. It was made by Messrs. Murdoch, Aitken, and Co., Hill-street Foundry, Glasgow. We understand that the parties who made this engine are making another even larger for an iron company near Lockwinch, Ayrshire.

MINE ACCIDENTS.

Swinsley Colliery, Wigan.—T. Martindale (a boy) was killed by being precipitated to the bottom of the pit, from the breaking of the rope to which the basket was attached, in which he and his father, and two brothers, were descending the pit; the father had his arm broken, and the others escaped with slight bruises.

St. Hilda Colliery, South Shields.—An explosion occurred in one of the workings, by which one man was much injured; the accident was occasioned by a naked candle being used by the injured miner, whose pocket was nearly filled with gunpowder, which exploded.

Levant Mine.—J. Grylls had his hip joint dislocated by the bob coming down upon him as he was crossing the engine-shaft.

will admit. Sir J. GRAHAM intimated his intention of laying all the documents shortly on the table, when we shall take the opportunity of recurring more particularly to the subject.

We are well pleased to find, by the Report of the Committee of the House of Commons on Railway Bills—that the objections raised to the prosecuting of the Cornwall Railway Bill, or South Line, in consequence of the standing orders not having been strictly complied with, have been futile, the "Standing Orders Committee" having decided that the promoters of the Bill might proceed with it. We are not informed what influence was used by the worthy Member for Truro; but, on the part of the Centralists, we understand, they consider themselves "sold." We trust that no time will now be lost in giving to Cornwall the advantages attendant on rapid communication, such as is afforded by railways, whilst the county may congratulate themselves on having a committee who have been fast-men and true, "One and All."

We last week expressed the views we entertained with reference to the inquest on the sufferers by the explosion at Blackwall, and the course we considered which ought to be pursued for the elucidation of the cause and nature of the accident. We now feel it our duty, even pending the adjourned inquiry, further to direct attention to a few plain statements elicited in the course of the evidence adduced. We should have abstained from any remark, until the inquest closed, had we not considered some observations called for, from the importance of the evidence, as calculated to compromise the character of an eminent firm, and from the belief that a word ere it be too late may tend to promote, rather than defeat, the desired end—that of affording satisfaction to the public, and to the parties concerned.

It appears, from the evidence presented, that the boiler had been about a month on the premises, and had been worked with a pressure of from between 40 lbs. and 50 lbs. to the square inch, while for such an engine, intended for low pressure, 20 lbs. to the square inch was the extreme limit to which it could be safely worked. Great mismanagement was attributed with respect to the safety valve, which it was affirmed must have been fastened down, and the handle of which was propped up to prevent its acting. It was stated that, at the time of the explosion, the engine, which has no steam-gauge, must have been submitted to a pressure of more than 100 lbs. to the square inch, and the witnesses concurred in attributing the accident to explosion, and not collapse; nor could such explosion have been occasioned by formation of hydrogen gas, as oxide of iron must have been then deposited—but this was not the case, at least such appears from the evidence advanced. From this we are induced to arrive at the conclusion, that the cause of the accident resolves itself into two points—malformation of the valve, or its having been prevented from acting. It has been stated that the area of the valve was 16.344 square inches, that of the valve casing 19.878—leaving an area of 3.534 square inches for the escape of steam; it would appear, therefore, that the valve must have been needlessly large, or the area around it excessively small. This valve, it is represented, had also to raise 13-16ths of an inch before it reached the bottom of the waste steam-pipe leading to the chimney. It thus becomes an interesting point to determine whether it requires an area of 16 square inches, or that less than 4 square inches will admit of the escape of steam generated in a tubular boiler, originally intended, as in the present case, to work a pair of 25-horse power condensing-engines. It has at least (so we are informed) been usual to allow 1 inch of valve to every 14 square feet of heating surface; but it would not appear that this rule has been approximated in the present instance. The inquiry is calculated to elicit much valuable information, and we shall watch its progress with interest.

We confess that, although the lamentations of our contemporary, *The West Briton*, with reference to the Ministerial measure which deprives the tin miner of the insignificant protection—if such it could be called—which the tariff reserved to him, by the insignificant duty imposed on the import of foreign tin ores, caused a smile when reflecting on the change which had come over "the spirit of his dream," yet we hailed with pleasure and satisfaction the aid which we may henceforth contemplate from the advocacy and support of the mining interest, by those who are so closely allied with it from their local position. We do not pretend to discuss the question on free trade principles, or to raise an argument on the protection afforded to the agriculturist, or other interests. Sufficient is it for us, to show the injustice done to a large and important class, whether considered as adventurers, whose capital is embarked, or the working miner, whose existence, and that of his family, may be said to be dependent on the working of the mines of Cornwall. It is, we repeat, pleasing to find so able a coadjutor, although we would respectfully submit, that he is wrong in his data; for, if we recollect aright, the duty imposed on foreign tin ores, was 20s., and not 50s., per ton; however, let this pass. We trust, now that he has taken up the cause of the tin miner, that he will not allow the interests of the copper miner to escape his attention, for we believe, in the year 1830, '31, and '32, he stood forward as the champion of the miner. We are glad to find that the deputation from Cornwall is in town, and communications have been made to the Minister, from a quarter to which we believe some deference will be shown, as emanating from undoubted authority, and based on correct data, and which, it is to be hoped, will have the effect of at least staying off the day which must bring with it destruction to our home mines—for, that the duty imposed on foreign copper ores, will, in like manner, be withdrawn as those upon tin, no doubt can be for a moment entertained. A deputation of the foreign miners and smelters—with one or two honourable exceptions, as regards the latter—have also been active within the past few days, and it requires more than ordinary vigilance and watchfulness on the part of the miner and mine adventurer to protect their respective and mutual interests. We reserve until next week further comment, when we hope to be in a position to support our argument by additional "facts and figures."

The Wheal Maria Mine continues its successful course, each ticket increasing the returns to the fortunate adventurers. The whole of the capital subscribed is, we believe, little more than 1000*l.*, or 1*l.* per share call on 1024 shares—while the price asked for a single share is, we are informed, from 300*l.* to 350*l.*, although we are not aware of any transaction at these prices; even were they taken at one-half, the price would leave a tolerable profit on an outlay of twenty shillings, and allowing a six months' interest on the capital embarked. Within the past few days, we are given to understand, a lode, supposed to be the lode, has been cut, about 600 fathoms east in the sett, which is represented as being twelve feet big, with good stones of ore. It is not many years since that a strong prejudice existed against the eastern part of the county of Cornwall, and the mining district of Devon. A few such astounding instances as the present will, however, we imagine, convince even our Cornish friends, that all the ore ground is not confined to the limits west of Truro Bridge. The second sale will be 636 tons, and the next, we understand, 1000 tons, producing from 11*l.* to 12*l.* per ton. The shaft is now down about twenty-six fathoms, the lode being stated to be worth 500*l.* per fathom, as is it at the twenty-three fathom level, going west, the ore ground being eighteen feet big. The ore already sold produced 4300*l.*, to which add second sale—say, 500*l.*—will give 12,800*l.* The month's cost may be taken at 650*l.*—the March ore are estimated as giving from 11,000*l.* to 12,000*l.*—or, in all, upwards of 20,000*l.* from a few fathoms of ground—thus justifying the representations made by us on our late visit there.

THE IRON TRADE.

There never was, perhaps, a period, since the manufacture of iron assumed any degree of importance in this country, in which the prospects of long continued prosperity in this great branch of our staple trade, are based on such certain anticipations as at the present moment. The years of high prices and consequent prosperity were 1817, 1818, 1825, and 1836, in which the prices of pig-iron were upon an average 9*l.*, 13*l.*, and 7*l.* 10*s.*, respectively; but the uses to which iron was put at those periods, do not appear to have borne out a sufficient cause for the great advances in price which were then obtained. Until 1836, railways, for which so many thousands of tons are required, were almost unknown in this or any other country, and the many uses to which it is applied, were either little understood or very sparingly adopted. Thus fire-proof buildings, and the general introduction of iron into both public edifices, and private houses and mansions, which carry off so large a quantity of our present supply, were little known a few years ago; but the great feature at present is the employment of iron in ship-building—that is, constructing both steam and sailing-vessels entirely of iron. On a careful examination, the building of iron vessels does not appear likely to be of a temporary nature, from the following facts, which came under the writer's own observation. Seven years ago, four sailing vessels were built for a company trading from an out-port to London. Three of them were built of wood, and one was constructed of iron. At the dissolution of the company last year, these vessels were sold—the three wood ones bringing one-half of their original cost, while the iron one was found to have suffered so little, and to have cost so small a sum in repairs, that she was sold for very nearly the precise sum of her first cost. These facts, among many others of a similar character, give such a character to iron vessels, and are beginning to be so well understood and appreciated, that there is hardly an iron ship building yard in the kingdom that is not fully employed, and where inquiries for iron vessels are not daily being made, and they justify our opinion, that within a few years there will be no vessels constructed of any other material. Government seems so fully convinced of their superiority over timber frigates, that many are now being constructed of iron in London, Liverpool, Birkenhead, and Glasgow, for public service, and the late increase in the navy estimates, seems to point out still further additions to our war steam-vessels. The cotton trade, under ordinary circumstances, takes about $\frac{1}{4}$ of the iron made in this country annually in machinery, arising from the ordinary wear and tear of steam engines, boilers, new mills, and the substitution of new and improved looms, &c. &c., for the old. But the number of new mills at present in course of erection exceeds any former period; and of course, must increase the average quantity of iron to be consumed in this branch of our trade. Agriculture also requires considerable supplies, which must this year, and for many succeeding ones, be greatly increased, from the improvements that are taking place in agricultural machinery. If to these circumstances be added, the extra demands for an increasing population, not only in point of numbers, but in wealth and general prosperity, it must be admitted, that a greater amount of iron will be required, both in this and other countries, than has ever yet been known. It has been urged, that high prices of any article will soon have the effect of increasing the production of that commodity. This, in most cases, is true; but it will not fully, and at all events, will not immediately, apply to iron, for the erection of new furnaces, and machinery, the sinking of new coal mines, and the forming of railways to bring the minerals to the point at which they are required, involve so large a quantity of iron, as to render it even scarcer for the time. Another cause which tends to diminish the production of iron while high prices prevail, is the advance of wages to workmen always incident to prosperous times, for a miner will work six days a week when he earns only 2*s.* a day; but only three or four days when he gets 4*s.* or 5*s.* a day. The great demand for labour in the forming of the new lines of railway, in tunnelling and embanking, will also draw from the iron districts a large amount of population, which would otherwise have been employed in the kindred branch of mining.

It may be a matter of some interest in the present state of the iron trade, to attempt to reduce to figures the amount of iron likely to be made and consumed in the present year, and with some labour, assisted by practical men, the following table has been drawn up:—

Pig-iron produced in England and Wales in 1844.....	Tons 856,000
Iron produced in Scotland, 1844.....	354,000
Total for Great Britain, 1844.....	1,210,000
Add for increase induced by high prices in 1845.....	120,000
Total for 1845.....	Tons 1,330,000
Estimated Consumption for 1845.	
2000 miles of railways, to be made in 1845 and 1846—say, half in 1845 contracted for—	
1000 miles of railway, 250 tons per mile for rails.....	Tons 250,000
Add for loss of one-fifth, in converting pig-iron to rails.....	50,000
1000 miles of railway require, of chairs.....	70,000
Add loss in manufacture, 5 per cent.....	3,500
Iron required for railways in progress, and passed in 1844.....	150,000
Iron for waggon, stations, engines, tanks, &c., computed from inspection of railway companies accounts, that each mile of railway requires 300 tons per mile above the weight of permanent rails and chairs—1000 miles will then give.....	300,000
Export in 1844, 460,000 tons—say, from the increase of railways abroad, and the remission of duties on iron by some of the continental states, it will be.....	500,000
General consumption of iron in Great Britain (exclusive of railways), in bar-iron, castings, water and gas pipes, in steam-engines, and the whole hardware of the country.....	480,000
Total.....	Tons 1,803,500

If this statement, in any way, is near the truth, we shall have a deficiency of nearly 500,000 tons of iron, which must cause the suspension of many great public works. It is possible, that from the exertions of our iron masters, a greater quantity may be produced than 1,330,000 tons; but it cannot be materially greater than what has been computed. Under any circumstances, however, it cannot be denied that the iron trade is more prosperous, and that its present flourishing state is not only certain of being permanent for some years, but more likely to increase than at any former period.

PROGRESS OF RAILWAYS.

The increase in the traffic receipts of the undermentioned twenty-six railways for the first nine weeks of this year, as compared with the corresponding period of last year, amounts to 194,798*l.*—namely:

Birmingham and Gloucester.....	25157	London and Croydon.....	16103
Chesster and Eirkenhead.....	653	Manchester and Birmingham.....	4619
Eastern Counties.....	3275	Manchester, Bolton, and Bury.....	946
Edinburgh and Glasgow.....	3629	Manchester and Leeds.....	8042
Glasgow and Greenock.....	198	Midland Company.....	13919
Glasgow, Paisley, and Ayr.....	2334	Newcastle and Carlisle.....	2034
Great Junction.....	6531	North Union.....	3320
Great North of England.....	2440	Preston and Weyre.....	1191
Great Western.....	18225	South-Eastern and Dover.....	18555
Liverpool and Manchester.....	4703	Sheffield and Manchester.....	1407
London and Birmingham.....	4658	Ulster.....	160
London and Brighton.....	3779	York and North Midland.....	1707
London and South-Western.....	2214		
		Total.....	194,798

GALVANIZED IRON.—It was our intention to have offered some remarks on the evidence adduced on the trial of Pateson v. Holland and others, as well as on the letter of Mr. Jones, the solicitor, against the defendants, which appeared in our columns of last week, but in the absence of the short-hand writer's notes, an abstract of which we purpose giving in our next, think it better to defer any observations on the one or the other. The question, we understand, will again come before a jury, while, both plaintiffs and defendants express their confidence as to the results.

LONDON, SALISBURY, AND YEovil JUNCTION RAILWAY.—A company has been lately formed, under circumstances more than ordinarily favourable, for the construction of a continuous line of rail between Dover and the metropolis, and with a proposal to extend its communication to Salisbury and the west of England. It will commence at the Reigate station of the Dover and Brighton Railway, and passing through Dorking, and other influential towns, to Basingstoke. From that point proceeding through Andover and Salisbury, thus forming an unbroken connexion between the east and west counties of England, and by using the line of the South Western from London to Basingstoke, bringing Salisbury and Yeovil into an entirely direct line with the metropolis. The distance being, from London to the former, eighty miles, and to the latter, 120 miles. The importance of this undertaking connecting also, as it will, the various trading towns of the west, appears by no means inconsiderable; we consider its object good, and the project, on the whole, *bona fide* and advantageous.

WATSON'S PATENT DRAINAGE.—We are informed that Watson's Patent Drainage has recently been applied to a portion of the Kilsby Tunnel, on the London and Birmingham line, and has given great satisfaction.

ON IRON SHIPS.

In a late Number of *The Mining Journal* [page 80] we referred to the preference given in Liverpool to iron vessels, and the great likelihood of their more general adoption prior to the end of the present year; since then, we are informed, that, at Walker, near Newcastle-upon-Tyne, Mr. Coutts has now in hand fifteen iron sailing vessels; this is certainly a wholesale way of introducing this material for shipbuilding, and is strong presumptive evidence of the justness of our anticipations; our only surprise is, that iron ships have so long remained in almost *statu quo* since their first introduction—possessing, as they do, so many incontrovertible advantages over wood. We may briefly state a few of them:—

1. There being no limits to the size of iron vessels, as there is to wooden ones, on account of the want of sufficient size of timber to construct the latter.
2. They draw and displace less water, on account of the difference of weight—iron ships being, on an average, only about 7-16ths, or less than half the weight of wooden ones.
3. They have much more stability than wooden vessels of the same model, on account of the cargo, or ballast, getting much nearer the water, or further below the centre of gravity and motion, in iron vessels; the difference of thickness of the materials between the water and cargo being, in iron vessels, about one-tenth the dimensions necessary for wooden ones.
4. They sail much faster, as it is well ascertained that flexible and slight wooden vessels sail fastest, and *vice versa* regarding strong and stiff ones. Now, iron ships have the properties of being more flexible than slight wooden ships, and stronger than stiff ones.
5. They are safer than wooden vessels, as they are fire-proof, and, when constructed properly, with water-tight bulkheads and air-tight decks, are perfect life boats.
6. They can be more easily repaired, as the only damage they can receive must be local, and from the manner of their construction, the injury can always be seen, and, of course, remedied.
7. They will last for a much longer period, if we may judge from the examples now afloat, that have been for years in the water in all climates, and not the least decay being visible.
8. They carry a much larger cargo, according to their tonnage, than wooden vessels, as the difference of the timbers and the two skins of a wooden vessel, on the sides and bottom, is rendered available for cargo; hence the saving in original cost, by having, say a nominal 300 tons ship to carry 500, which is about the difference between iron and wooden vessels of the same builders' dimensions; and a great saving is likewise effected as regards expense of working the vessel, harbour dues, and lights.
9. Iron vessels have the property of decreasing in price per ton as they increase in dimensions, whereas wooden ships increase in exactly the opposite ratio. A twelve-years A 1 ship, of 200 tons, builders' measurement, would be about the same expense as an iron vessel of like dimensions, only the iron vessel would carry one-third more cargo at the same draught of water; but an iron vessel, of 1000 tons o. m., would only cost one-half the price of a like wooden one, besides the additional stowage and easy draught of water.
10. They are, when properly constructed, much stronger, and can be grounded, or beached, in any quarter with perfect safety.
11. Insurance can be effected upon either ship or cargo at as low a figure (if not in many cases lower) than can be done upon a first-class wooden vessel under like circumstances.
12. They require no coppering or protection from the worm or dry-rot—those two dangerous diseases incidental to wooden vessels; and, by attention, the bottoms of iron ships can be kept perfectly clean.

From these qualities becoming daily better known, the unfounded prejudice against iron vessels must soon fall to the ground, and even when the present unprecedented stimulus in the iron market, from railway speculations, shall have ceased, the ironmaster may then look forward to a very fertile demand for his manufacture from the marine of the country.

In wooden-built vessels the principal cost lies in the material alone—the labour being but a small part of the expense; but in iron-built vessels the labour constitutes nearly the whole of the outlay, for, from the first mining of the ore and fuel to the finishing of the last rivet in the fabric, it is but a succession of manual labour, which is represented by the payment of wages, through its many and varied phases.

RAILWAYS AND THE BOARD OF TRADE—THE YORK LINES.

The *Gazette* of Tuesday last, was unusually important, not only as regards the interests of contending parties, but the establishment of a certain principle. Hitherto, the Railway Department of the Board of Trade, had recognised apparently the superior claims of those companies whose reputation was of long and antecedent date: and a preference was given to such bodies whose labours had already been engaged in similar undertakings: in fact, with but a few exceptions, unequivocal patronage was conferred on companies whose extensive previous operations had acquired them at once a character for stability and integrity. This principle, savouring apparently of monopoly, is not without its benefits. Unless another can establish vast superiority, in its respect for public advantages and private rights, we conceive that its claims should be well weighed before admitted in priority to those of a more independent, influential, and trusty body. Still, where the advantages of an humble rival company are indisputably greater than another, and its character as confidently relied on, though not as practically attested, the preference to such would be neither unsafe nor misapplied; and this appears to have been all along the sound principle on which the Board of Trade have acted, nor was the decision, on Tuesday last, in opposition to this rule. The most important and extensive notification which has yet been issued, dealing with interests more enormous than perhaps men ever before adjudicated on, affecting the general traffic and intercommunication of the country, and involving the expenditure of capital, whose amount may be computed by millions, the report was looked for with an anxiety only commensurate with the inconceivable importance of its result.

The great contest for the gigantic line between London and York, where the unlimited resources of the Direct Northern and the London and York are engaged in fierce antagonism, has now been temporarily decided—we say temporarily, for no one can entertain a doubt of its being again, with redoubled energy, renewed before the committee of the House of Commons. The London and York, hitherto one of the mightiest and most comprehensive of the various new railway undertakings, has been wholly overthrown; while its rival is alike denied the power of construction for so much as they propose in union—but, at the same time, is accorded the authority to prosecute its operations between Lincoln and York. This decision—though, of course, neutral as regards the really disputed ground between the metropolis and York, the greater part of which distance the two travel together almost in parallel lines—is a great victory for the Direct Northern, and, as their desire pre-eminently appears to have been the promotion of public advantages, without interfering with vested rights, we see no reason to complain of the report. Nor was the opinion of those most competent to judge, at variance with the decision; this was particularly evinced by the state of the share market, and the gradual advance of the Direct Northern shares—caused, no doubt, by a belief, that by extending the line of communication from Cambridge to Lincoln, and thence to York, as recommended by that company, and ratified by the report, it would, without involving the great national principle of direct communication, tend best to consult the accommodation and benefit of the public.

The fluctuations in the market, since the decision of the Board, have been as frequent as extraordinary. On Tuesday evening, the closing prices of the Direct Northern were 15*s.* to 1*l.* premium, for shares on which 24*l.* had been paid; on Wednesday, the quotations ranged between 24*l.* to 44*l.* at which value they now stand, although having undergone changes as ready every hour during the week. The same may be said of the London and York, closing on Tuesday, on which night the *Gazette* appeared, at from 24*l.* to 34*l.* premium, on shares of 24*l.*; they were quoted, on the morning after their rejection, at 44*l.* to 44*l.*, but gradually declined more and more, till at the close they had sunk to 24*l.*; yesterday, they slightly rallied, but again closed at a very low figure. On the whole, the market was in a most excited state, and notwithstanding the depreciation of their shares, the London and York assumed the most utter disregard of their unfavourable position, and affected entire confidence in the result of their appeal to Parliament.

PATENT GALVANIZED IRON.—In reference to the pending trials against Messrs. Walker and others, for the infringement of this important patent, we are informed, that, although the proceedings had been withdrawn in the Common Pleas, and writs issued in the Exchequer, as stated in our last Number, it has been since found that the business is unusually light in the former court; and, therefore, one trial having taken place in this court, it has been deemed advisable to go on against the other parties in the Common Pleas. The proceedings, it is stated, are being pressed forward with all possible vigour.

ON THE VENTILATION OF MINES, AND THE MEANS OF PREVENTING EXPLOSIONS FROM FIRE DAMP.

BY PROFESSOR FARADAY.

(Continued from *The Mining Journal* of last week.)

This is perhaps one of the most explosive mixtures which can happen in a mine from fire damp; for the proportion of gas and air is stronger than would usually be found there. One of gas to five of air, or one of gas to fourteen of air will form an explosive mixture, or any numbers between the two; but either less or more will not effect the object. When this gas is burning the products resulting are water and carbonic acid. If I burn a portion of gas in this way I can very soon show you both the water and the carbonic acid. (Burning some gas under a glass.) You will there see the evidence of the water at once; for the moment I place this glass over the lamp I shall have the water produced by condensation. You perceive that the glass is even now becoming quite dim, not with dirt, but with water produced by the gas; the hydrogen combining with the oxygen and forming water. As the combustion proceeds more and more water is formed. Besides that, I have here also carbonic acid, which I will prove to you by putting in a little lime-water, which, upon being shaken up with it, immediately becomes milky in appearance. You have now before you a proof of the two things evolved from the gas, the milkiness evidencing the presence of carbonic acid, and also the water produced from the combination of the gas with the air. The effects which I have now shown you, from experiment, are the same as those which take place from the combination of the fire damp with the air conducted into the mine. I need not take up your time by pointing out the fact, that the same effect is produced by respiration. You will take it for granted, that when the air is breathed, exactly the same change takes place as when gas is burnt. I merely mention the circumstance, to point out to you, that, as in breathing the air we cause it to become of a bad quality, so the same effect is produced in air burnt in combination with gas, whether fire damp or coal gas, it will make the air as bad for breathing as though it had been breathed itself. I will take this jar and breathe into it, and when I throw the air from my lungs into it you will see how bad it is. The air which is now in this glass is so bad that it will extinguish a light. It is now unfit to breathe, and so also is the air combined with the coal or fire damp in the mine. (The lecturer showed these effects by experiments.) This is one reason why so many lives were sacrificed, and the accident was so extensive, by the recent explosion at Haswell Colliery. The circumstance of the combination, to which I have referred, in the mine, produces the very same kind of bad air as produced the explosion I showed you from the mixture of coal gas with air, which certainly seemed a very tame explosion. Before we went down into the mine in the first instance it was exceedingly difficult to account for so large a number of deaths as ninety-five taking place, when, from the report of men who had come out of the pit only an hour or two before, there was little or no gas in the mine. Miners who had only come out about an hour and a half before the accident gave evidence before us that there was no gas in the mine. It was, therefore, a difficult thing to account for the deaths of so many persons. Some of these unfortunate individuals were burnt, but a great many were not; the former evidently died from burning and suffocation, the latter from suffocation only. I will show you a little experiment which illustrates the manner in which, when a fire does happen in a mine, the evil increases and grows up to a most enormous extent. You see I burn this gas fairly, merely giving it an opportunity of mixing with the air gradually, and so, getting the right and just proportions, it burns very brightly; but if I mix it with air first—which is always the case in a mine—it does not burn in the same character. I have here a lamp of wire gauze, upon Sir Humphrey Davy's principle; it will not allow the flame to go through; it will allow the air to go in and the gas to go out; consequently, if I let the gas into this wire gauze, it will mix very much in the same manner as it does in the mine before the miner by accident sets fire to it. In setting a light to this, I shall, therefore, have a very different effect to what I had before. You perceive that I have now a combination, not of air only, but of air and gas burning together; this would explode, were it not that the wire gauze prevents any such consequence taking place. We see here the combination which takes of coal damp and air down in the mine; but that is not all which occurs there, for, in my belief, by far the greatest portion of combustible matter burnt in a mine, upon such occasions, is the coal-dust which rushes up the passages when the explosion has happened. When we went down, we found, near to the place where the explosion occurred, all the columns plastered with coal-dust taken up from the floor and driven forward by the blast, forming a fiery stream passing through the passages, part of it coking, other portions being converted into gas, and some cemented to the walls; clearly showing the direction which the explosion had taken, because one side was plastered half an inch thick, while there was none on the other side, indicating fully both the chemical and mechanical effects of the explosion. If I take a little coal-dust, and mix it with that flame, you will soon see what a difference there will be in the combination. The danger arises not merely from the combination of air and fire damp, but from the kind of mixture which I am now going to make. I have thrown a little powdered coal into this apparatus, and you see how much stronger the combustion comes on. The gas, first of all, commences the evil, and then lights up this combustible matter (the dust of coal) of which the whole place consists; floor, roof, walls, and every part being composed of it. The fire thus gathers energy, and goes on ramifying through the mine. It is only upon this principle that we can account for the extraordinary extent of injury by choke damp, the result of combustion, causing ninety-five deaths in what was considered a very safe mine. Now, with regard to the coal gas; for I must really shorten my observations, for the purpose of bringing you at once to the point in relation to the coal and the coal damp. Fire damp is light; and we may very well use an experiment or two here, for the purpose of pointing out by coal gas what its effect is. Coal gas is really, in many cases, when made in London, not far off in its degree of gravity from the fire damp. Now, here you would not understand in a moment the principle, but these experiments and demonstrations make it far more impressive to the mind. (The lecturer then showed various experiments, to prove that coal gas, and therefore the gas of the mine, if accumulated under a vessel, or chamber open below, but having no outlet above, would remain at the upper part, and when mixed with atmospheric air would, if a light be brought near, ignite and explode.) The consequence is this, that if the blower, or any gas in the blower, can get into a place of this sort, it will remain there some time. I will not put a light there, because it might shake the thing to pieces. If I come here two, three, or even ten minutes, after I have filled it with gas, I shall find the fire damp remaining there. (Experimenting.) There it is. You perceive that I had to carry my light up a certain distance; I could not find it lower down, but there we found it, because of its lightness. So light is this gas and this fire damp, that it flies from one thing to the other. I have one very important point to show you with regard to the operation of these coming immediately into action in the coal. This gas is always to be found at the upper part of any cavity where it may exist. If you will allow me to consider this as a model gas (an oblong inverted vessel) for the purposes of our illustration, you will soon see the effect of its lightness in determining the gas to one place or the other; for if I let a little gas into this vessel, which I can do from this jet, whichever end of this gas I incline up there the gas will be found: it will not remain in one place, but will oscillate from side to side, according to the position of the vessel, in consequence of its lightness; being, in that respect, comparable, in an inverse ratio, to water, which, of course, will flow from side to side in the vessel, because of its heaviness. Whatever you can imagine in fluids you may suppose also in regard to gas. I will let gas into this vessel. Although I have a great number of drafts, and I myself make a considerable motion in the air, I dare say, in this place we shall be able to make the experiment. (The lecturer then showed by experiment that the gas was at all times in the upper part of the inverted vessel, and that it moved from end to end, according as one or other end was raised.) In a mine, there appears to be a tendency to the evolution of this light hydro-carburetted fire damp. It seems to be oddly given forth at times. A man will come upon the place of his finger, rushing out, perhaps, and there comes a rush of gas from a place the size of my finger, rushing out, perhaps, and taking fire by his candle: if it happens without any serious injury to the man, it will burn away like a great torch. At other times it will creep up to every part of the coal; then an accumulation will take place with the atmosphere from these blowers, but still equally dangerous. There was a case in which the gradual evolution of fire damp from the coal produced this effect. A vessel, laden with coal, having come part of its voyage, the gas from the cargo came out and made the hold of the vessel explosive: a sailor happened to go down below with a light, and the place blew up, exactly in the same manner as the explosions take place in these passages of the mines. This shows under what circumstances the gas comes out of the coal during the working of the mine. If there be any evolution of gas in a mine, which at any time causes the conveyance of gas into a cavity of the coal, it will, as you have seen in this experiment, tend to rise to the upper part. It is a light gas; every mixture of it is lighter than air, and the light gas will tend to rise to the higher part. There is, therefore, every reason to believe, that if this coal opened into the stratum, and you will find there are five, six, or more strata above that which they work in reality, from the opening of small seams and beds, or whatever cause it be, it will open passages from that to the upper strata of this, to the fire damp contained in the coal itself. There is not the least doubt that any vents of this sort would tend to become resting-places for the gas, which would run into it at different times and under different circumstances, and there remain in larger or smaller degrees. There can be no doubt that the coal is a very convenient place for the gas to accumulate in; that there is a tendency to that in the coal from the ventilation, the arrangement of which I must not go into, but it is very beautiful. There are two deep pits; the one has a furnace at the bottom, so that the first becomes a chimney. There is an immense draft up this pit, and there is a great mixture of air and gas. They ventilate most carefully the space of coal where they are working, because there they are ever coming to new reservoirs of gas, and new apertures open into it. They ventilate

the coal also, in some degree, but so feebly, that the air there is almost stagnant. They cannot afford to have a sweeping current all over the whole of the mine. Whenever a mine contains 100 acres, any quantity of air which goes down a cavity twelve feet in diameter cannot be made to extend over the whole of that space. The gas goes through the apertures which are left; so that in such places the air must be regarded as really stagnant. Much more are the cavities within the coal stagnant. These goafs are loose masses of rocks falling together. If you take a sponge in a gale of wind, the air sweeps away all from the outside; it would not touch the cells, or inner side. These cavities then become, in fact, reservoirs for fire damp, if they have access to the coal. It will contain fire damp just as well as any other part. Any previous part of the coal may be made subject to fire damp, if there is any in the coal of the mine.

Mining Correspondence.

ENGLISH MINES.

HOLMBUSH MINING COMPANY.
March 10.—In the 120 fathom level, east and west of the cross-cut, the level is ten inches wide, and worth about 6d. per fathom. In the 110 fathom level, west of Hitchins's shaft, the level is fifteen inches wide, and worth 10d. per fathom; in the stopes in the back of this level, east and west of Mitchell's winze, the level is sixteen inches wide, and worth 20d. per fathom; in the stopes west of Lobb's winze the level is eighteen inches wide, and worth 30d. per fathom; in the stopes west of the sump winze the level is fifteen inches wide, and worth 16d. per fathom; in the stopes west of Goldsworthy's winze the level is one foot wide, and worth 10d. per fathom. In the 100 fathom level, west of Hitchins's shaft, the level is one foot wide, and worth 18d. per fathom; at this level, east of Wall's shaft, the level is small and poor; in the stopes west of Hitchins's shaft the level is ten inches wide, and worth 8d. per fathom; in the stopes west of the south cross-cut the level is sixteen inches wide, and worth 28d. per fathom; in the winze sinking below this level the level is fifteen inches wide, and worth 28d. per fathom. In the ninety fathom level, west of Hitchins's shaft, the level is small and poor; in the stopes east of Pearce's winze the level is six inches wide, and worth 22d. per fathom. In the rise in the back of the eighty fathom level the level is nine inches wide, producing good stones of ore. The tribute department, on the whole, continues to look well. T. RICHARDS.

COOK'S KITCHEN MINE.
March 8.—In the stopes in the bottom of the sixty fathom level, east and west of the shaft, North Tincroft level is three and a half feet wide, and worth 13d. per fathom. The pitch in the bottom of the fifty fathom level, west of the shaft, at 6s. 8d. in 20s., is looking very well; the ground continues favourable in the cross-cut south from flat-roof shaft. At the seventy fathom level the part of Chapple's level, in the 170 east, which we are carrying, is still four feet wide, and worth 6d. per fathom for tin. In the 160 west the level is four feet wide, and worth 6d. per fathom for tin. In the 140 east the ground is very favourable. In the cross-cut north, at the ninety fathom level, to cut Eudey's level, the ground continues hard. Dunkin's level, in the 170 west, is two and a half feet wide, producing stones of tin; we anticipate an improvement in this level shortly, having had a good look about twenty fathoms further west, where we sunk a winze from the 160 to the 170. The cross-cut north, at the 140, is progressing in easy ground; we have about five or six fathoms more to drive to cut Dunkin's level, west of the level cross-course. We have not yet cut the level in the cross-cut south from Rogers's shaft, at the twenty-nine fathom level. Our tin pitches are improved since our last, but those on copper continue much the same; still, on the whole, our prospects are more cheering. A. EDEY.

TOKENBURY MINING COMPANY.
Feb. 21.—The engine-shaft on D level is now down to within four fathoms of the intended twenty fathom level under the deep adit, and the four fathoms is set at 23d. per fathom, with a premium of 4d. if completed within ten weeks from this day. The shaft will then be sixty fathoms from the surface. We have had from one to two feet of the level in the shaft lately in sinking; it is principally composed of spar, and occasionally spots of ore and soft priam. The level has not been cut through under the deep adit. After getting down to the twenty fathom level, we shall be able to drive north about ten fathoms, to cut E level, which contained some ore both at the shallow and deep adits, and was very kindly at the latter where we drove on it four or five fathoms; we shall, also, of course, drive west, if not east also on the course of D level. The cross cut at the deep adit level on the cross course, towards A and B levels, has been continued, but neither level is yet cut. It has for the last ten to twelve fathoms been in killas, and the cross course small and ground harder (set to-day at 6d. 6s. per fathom). The distance of the first level, at the engine-shaft, has been driven in the cross cut; and, as the level is not cut, we may presume that its course is not quite parallel to D. There is water coming from the cross course, and we are probably near the level. A level has since been cut two and a half feet big, and containing some good ore. Crouch's engine-shaft is down forty-two fathoms under the deep adit, and sixty-eight from surface. The level in the shaft, is two feet big in the western end, composed of spar, mudiic, and strong spots of ore. A forty-two fathom level west will be commenced as soon as possible. Ten fathoms above the present bottom (thirty-two under adit) a cross cut was driven eighteen feet to the other part of E 3 level, which is found twelve feet big, and the north wall not yet seen, it is composed of spar, mudiic, jack, and good spots of ore. The twenty-two fathom level has been continued west as far as where in the level above the level improved, and became saving work. The improvement has not yet taken place at the twenty-two; but as the ore-ground above appeared to be shooting westward, we have yet to drive a little further (price, 10d. per fathom).

At a meeting of the adventurers, held on the 27th ult., the accounts having been seen and allowed, it was resolved—That a call of 5d. per 1-128th share be now made, payable immediately at the Devon and Cornwall Bank, Liskeard.

WHEAL SISTERS MINING COMPANY.
Feb. 22.—The engine-shaft is down seventeen fathoms under the twenty fathom level; the ground is hard, now set at 25d. per fathom, and consisting of capel and spar. The distance to drive from the forty (when down) to the north level will be twenty fathoms, and to the south level six fathoms. The winze sinking to meet the intended level is down eight and a half fathoms; the level in it is four feet big, fifteen inches of peach and mudiic, and the remainder capel, with small sprigs of ore in it. The winze is set at 10d. the men to draw the water: the cost would be much lessened by drawing the water by a small lift. The level in the twenty fathom level, east of the winze, was stripped down seven to eight fathoms, and found five to six feet wide, with good stones of ore, and would work at high tribute. The gossan still continues at this depth. At the south engine shaft, the thirty-one fathom level has been driven west on the course of the level twelve fathoms. The level in the end is now two and a half feet wide, of spar, peach, mudiic, spotted with ore—a very kindly level, but no saving work. We consider this but a branch of the level, and we have cut in south fourteen feet, towards the other part, but have not yet cut it. We have commenced an intermediate level, twelve fathoms under adit, and have driven west on the level five fathoms; level in the end, two feet wide, of mudiic and ore, saving work a foot wide; and the remainder, soft spar, peach, and mudiic, a very promising level. On the whole, the mine looks as promising as at any former time.

At a meeting of the adventurers, held on the 27th ult., the accounts having been seen and allowed, it was resolved—That a call of 4d. per 1-128th share be now made, payable immediately at the Devon and Cornwall Bank, Liskeard.

UNITED HILLS MINING COMPANY.
March 11.—In the eighty fathom level, in the eastern end, the level is nine feet wide, three feet good ore, improved since last week; in the western end the level is three and a half feet wide, producing but little ore. In the seventy fathom level, in driving east, the level is two and a half feet wide, one foot ore of average quality; in the western end the level is three feet wide, ore throughout, of a coarse quality. In the sixty fathom level the rise is communicated to the winze sinking from the fifty fathom level; we shall resume driving the sixty fathom level east as soon as possible. West of James's shaft the level is four feet wide, two feet ore of fair quality; in the eastern stopes the level is three feet wide, fourteen inches on the south part good ore; in the western stopes the level is three and a half feet wide, two feet good ore. In the fifty fathom level the ground in the cross-cut is much the same as when last reported. In the thirty fathom level the level is eighteen inches wide, producing good stones of ore, looking promising. In the ten fathom level the level is eighteen inches wide, producing but a small quantity of ore. At Wheal Sparrow, in the fifty fathom level, eastern end, the level is three feet wide, producing some good stones of ore; in the western end the level is two and a half feet wide, producing but very little ore. In the forty fathom level no alteration in driving east since last reported; in the western end the level is two feet wide, producing some stones of ore, but not rich; the winze is communicated to the fifty fathom level. In the thirty fathom level the level is two and a half feet wide, one foot on the north part ore of average quality. T. TREVENEN. R. WILLIAMS.

REDFOOT UNITED MINING COMPANY.
March 10.—At Wheal Marquis the cross-cut, at the seventy fathom level, is now four fathoms from the shaft, and in favourable ground. The level in the fifty-eight fathom level east is two and a half feet wide, composed of spar, mudiic, and ore, and worth 10d. per fathom; and in this level west the level is two feet wide, composed of spar, mudiic, and ore, saving work—a very kindly level. In the forty-seven fathom level west the level is two feet wide, producing saving work; there has been no level taken down in the bottom of the forty-seven fathom level east since last report; the level in the deep adit level is two feet wide, composed of spar and mudiic, with stones of ore in places. At Ding-Dong the level in Thomas's engine-shaft is two feet wide, composed of spar, mudiic, and ore. In the twelve fathom level east the level is two feet wide, composed of spar, mudiic, and ore, and altogether presents a much more favourable appearance than it has for some weeks past. At Wheal Tavistock the level in Phillips's engine shaft is two feet wide, and without important alteration. At Delve's Kitchen but little has been seen of the level in the adit level since last reported, the men having been engaged in clearing and securing runs. J. PHILLIPS.

TRELLEIGH CONSOLS MINING COMPANY.

March 8.—In the seventy, west of Good Fortune, the level is three and a half feet wide, still producing stones of ore; in the seventy, east of ditto, the level is two and a half feet wide, looking more promising, with some ore. In the sixty, west of ditto, the level is eighteen inches wide, with some ore, but rather disordered at present; in the rise above the sixty, east we are rising south of the level, it being hard, and shall leave the level to take down until holed. In the fifty, west of Symons's, the level is two and a half feet wide, worth 14d. per fathom. In the forty-four, west of ditto, the level is two feet wide, with stones of ore. In the thirty-four, west of ditto, the level is about two feet wide, producing some ore, and looking more kindly. In the twenty, west of ditto, the level is twenty inches wide, with some ore, and more kindly at present than it has been; in the adit, west of ditto, the level is twenty inches wide, producing good stones of ore. In the fifty, west of Garden's, the level is twenty inches wide, with rather a kindly appearance, and stones of ore. W. SYMONS.

GONAMENA MINING COMPANY.

At a meeting of the adventurers, held on the 26th ult., the accounts having been seen and allowed, it was resolved—That a call of 3d. per 1-256th share be now made, payable immediately at the Devon and Cornwall Bank, Liskeard.

YEOLAND CONSOLS MINING COMPANY.

Feb. 27.—The engine-shaft is sunk twenty fathoms under the deep adit; the pressure engine is fixed, and is expected to work this evening; a capstan and shears to let down the pitwork has been put up since last meeting. We propose sinking ten fathoms more as quickly as possible to G level in the shaft; this will probably be accomplished in less than three months. The adit has been continued north towards the boundary of the consolidated ground, from which (Cock's level) we are still distant twenty fathoms; no level has been cut since last meeting.

WEST WHEAL JEWEL MINING ASSOCIATION.

March 10.—The rise in the back of the 100 east, on Wheal Jewel level, is worth 6d. per fathom; no level taken down in the 100 west, on ditto, in the past week—the ground a little more favourable for driving. In the rise in the eighty-five east, on ditto, the level is worth 7d. per fathom; in the winze sinking below this level the level is worth 8d. per fathom; in the eighty-five west, on ditto, the level is small and unproductive. In the winze sinking below the seventy east, on ditto, the level is worth 4d. per fathom; no level taken down in the western winze, sinking below the same level, since our last; the ground in the eighty-five cross-cut north is favourable. The forty-two east, on Buckingham's level, is worth 2d. per fathom. The thirty east, on Morcomb's level, is two and a half feet wide, composed of spar, mudiic, and spots of ore. The level in Wilkinson's engine-shaft, sinking below the fifteen, is three feet wide, composed of spar and stones of ore. S. LEAN. R. JOHNS.

CALLINGTON MINING COMPANY.

March 10.—In the ninety fathom level, both north and south from Johnson's engine-shaft, the level is worth 6d. per fathom. In the eighty fathom level, driving south, the level is worth 4d. per fathom; in the north end we are opening tribute ground. In the sixty fathom level the level is producing silver-lead ores. At the north mine, in the eighty fathom level driving south, the ground continues soft, and the level is producing rich work for silver-lead ores, leaving backs that will work at a low figure. In the sixty fathom level we are driving through tribute ground. In the forty fathom level, the level is producing silver-lead ores. The caunter level, at the seventy fathom level, driving west, is about three and a half feet big, presenting a most favourable appearance, and producing half a ton of copper ore per fathom: the ground is also soft for driving. In conclusion, I would say, that our prospects are steadily improving, and we intend sampling February ore on the 13th inst., about sixty-five tons. J. T. PHILLIPS.

CONSOLIDATED TRETOIL MINING COMPANY.

March 10.—The level in the sixty fathom level, west of Henwood's shaft, is ten inches wide, producing some good ore; price for driving 7d. per fathom; ditto, east of Henwood's shaft, is one foot wide, unproductive; price for driving 6d. per fathom. The level in the forty fathom level, east of Henwood's shaft, is one foot wide, and worth 2d. per fathom; price for driving 3d. per fathom—tribute, when set, 11s. in the 1d. H. WILLIAMS. J. MORCOM.

SOUTH YEOLAND MINING COMPANY.

Feb. 27.—No works are being carried on, except in the consolidated ground, as reported in the Yeoland Consols report. The accounts with Tokenbury have been settled, and South Yeoland adventurers now pay but half the costs of Yeoland Consols.

At a meeting of the adventurers, held on the 27th ult., the accounts having been seen and allowed, it was resolved—That a call of 1d. per 1-128th share be now made, payable immediately at the Devon and Cornwall Bank, Liskeard.

LEWIS MINING COMPANY.

March 8.—We beg to hand you our report of this mine. At Lewis engine shaft, the level in the twenty fathom level east is eighteen inches wide, unproductive at present; the level in the west end, same level, is twelve inches wide, producing good stones of ore, and very kindly. We have holed the sump winze shaft to the thirty-two fathom level, we hope to complete it, so as to bring down the whim kibble, in ten days or a fortnight, after which we shall be able to drive at the thirty-two on the course of the level, much faster, and at less expense. The level in the thirty-two west is twelve inches wide, composed of gossan, spar, &c. At the north level, the level in the winze, sinking under the adit, is six inches wide, producing some good stones of tin. At Wheal Nutt, we have commenced sinking the engine-shaft under the twenty fathom level. On the course of the north level, where we have raised some good work for copper ore, the level in the east end, at the twenty, is two and a half feet wide, producing good stones of copper ore, with some tin; we think this level will lose the tin depth, and be a good level for copper ore. We have holed a copper ore shaft to the twenty on this level, and are driving east on it from that shaft, where it is four feet wide, a real good looking level. The ten fathom level east end is producing some good stones of tin, which will more than pay the cost of driving. The ten fathom level, west of sump winze shaft, on same level, three and a half feet wide, producing occasional stones of copper ore. On the middle (or main) level, we are doing nothing at present, not having yet got to the bottom of old men's workings. At the south level, the twenty fathom level east end is yielding good work for tin, driving at 20s. per fathom, and 6s. from the 1d. for the tin; the back of this level is set at 11s. tribute; we continue to work with spirit, in the full expectation of making it a good mine. SAMUEL S. NOEL. PETER EDDY.

CORNTHURAN MINING COMPANY.
March 10.—The eighty-six fathom level going west is improving, level getting large and promising, and yielding some good work for lead; eastern end is without alteration since last report. Our tribute pitches are working with prospects of raising fair quantities of work, and one pitch in particular, working by eight men at seventy fathom level on the north level, is very much improved, and not unlikely to prove of some importance to us. R. ROWE.

FOREIGN MINES.

WEST INDIA MAIL.—The *Tay*, Royal Mail steam-ship, arrived at Southampton on Tuesday last, bringing £151,907 (\$10,000 of which are on account of the Mexican dividends), 2207 15s. British coin, 19lbs. gold dust, 1734 5s. silver, 101 lbs. plata bruta, and 59 serons cochineal.

UNITED MEXICAN MINING ASSOCIATION.

Guanazuntz, Jan. 24.—*Mine of Rayas.*—The produce on hacienda account continues very low, but the sales on joint account with buscones, have improved very considerably; one sale—viz., that of the week before last—having reached \$20,607 4, owing to the produce of the campo in animas having increased that week, in consequence of there not having been any ore extracted thence the previous week. In last week's sale there was no ore from the good campo, and the large quantity of general extraction made up the sale. The sale this week will be high again; because the extraction from the good campo, embraces the operations of two weeks. These circumstances are mentioned for the sake of giving some information, which will occasionally explain the great difference observed in the sales from one week to another. At sufficient depth below this campo, a work has been undertaken on hacienda account; and should it prove that the good ore, at present being followed up by the buscon, extends to this depth, the point will be carried on for account of hacienda. The general result of operations in the mine for the five weeks ending the 21st of December, as compared with the five previous weeks, will be seen from the following statement:—

	Picked ores.	1 amt. solds.	Memorias.	Excess.
5 weeks ending Nov. 16.	Cs. 187 6.	\$19,873 8 0.	\$19,380 4 0.	\$493 4 0.
5 " " " " " "	Cs. 163 6.	20,886 7 0.	18,519 4 6.	1067 2 4.
	Cs. 254 0.	\$1013 2 0.	\$410 3 6.	\$1423 5 1.
	Decrease.	Increase.	Decrease.	Increase.

Thus showing, in the latter five weeks, a decrease of 234 carags of ores, but, at the same time, an increase of \$1423 5 6 in the amount of half sales over memories; and for the four weeks ending the 18th January, as compared with the four previous weeks, was as follows:—

	Picked ores.	1 amt. solds.	Memorias.	Excess.
4 weeks ending Dec. 21.	Cs. 198 8.	\$16,459 4 0.	\$14,979 0 0.	\$1480 4 0.
4 " " " " " "	Cs. 128 3.	27,916 7 0.	17,489 2 3.	10427 4 7.
	Cs. 3 2.	\$11,456 3 0.	\$2,510 2 3.	\$8946 0 7.
	Decrease.	Increase.	Decrease.	Increase.

The amount of memories will be rather higher for some time to come than during other portions of the year, in consequence of the purchase of stores which are laid in at this season. The sum of \$17,822 has been received on account of the mine debt, which is thereby reduced to \$739,848 1 2, subject, however, to further reduction on the realisation of the ores on hand at the hacienda of Escalera and Barrera.

Quicksilver.—The invoices of the eighty bottles shipped per steamer *Du* the October packet, and the eighty per steamer *Tay*, the November packet are to hand; and their amounts, 1,826l. 3s. 2d. and 1,827l. 6s. 11d., pass.

* A Lecture delivered at the Royal Institution, London, January 17, 1848.—From the *Report of the Royal Institution*.
[To be continued in next week's Journal.]

the debit of the corresponding account; and it is observed, that eighty bottles more had been purchased and sent to Southampton for shipment by the *Trent* steamer appointed to take out the December mails.

Remittances.—By a conducta, which left here for Tampico on the 21st inst., I forwarded to our agents there \$51,000, with instructions to ship by the first R. W. I. M. steamer, the sum of \$50,000 to the order of the chairman of the court of directors. The additional \$1,000, are to meet expenses on quicksilver from England.

Note.—This is the remittance promised in Mr. Glennie's letter of 25th November, and it is now hoped that the state of the country would be sufficiently tranquil to allow of its safe arrival at Tampico, and it, therefore, ought, to be received here by the next packet, due the 7th April.

London, March 12.

JOHN MATHER, Secretary.

ANGLO-MEXICAN MINING COMPANY.

Guanajuato, Dec. 30.—The average extraction of ore from the mine of Ascension has been somewhat better in respect to quantity than the month before, amounting, in the five weeks ending the 21st inst., to 4035 cargas—being 807 weekly; but the latter weeks show a considerable decline, as seen by the following figures, representing the respective extractions of the weeks—viz.: 993, 882, 711, 725, 674 cargas; and this circumstance, taken in conjunction with the lowness of the ley, makes results at the moment unsatisfactory. The points worked for ore have been five—viz.: pozo and contraciolo of Buen Suceso, pozo of San Casimiro, frente de La Palma, and contraciolo of Serenidad—particulars respecting which, as to produce and appearances, will be found in the accompanying weekly reports and documents, to which I request the favour of a reference. In Sirena appearances are encouraging; the level of Santiago was driven fifteen varas, with the same accompaniment of ore as before, and then got into a cross vein, through which it has been driven three varas, without reaching the lower wall; this cross vein contains ore also, in small bunches, but of good quality. The four haciendas have continued in full work, but the decline in the Ascension and Rayas ores has made me look out for maquileros. I have agreed with Dr. J. Sanchez for twelve arrastres at Escalera, and am endeavouring to get others to meet the deficiency on the supply of ore. The Rayas arrastres will have to be reduced to one half of the original number of thirty, owing to a decline in the hacienda labores of that mine, and in Ascension, the diminution will render disposable about thirty arrastres, unless Sirena come in with its aid shortly. The surplus shown by the finance estimate of the present month, herewith transmitted, amounts to \$112,884, being \$14,523 better than the month preceding; but a good deal of this apparent increase arises from an augmentation in the valuation of the ore in progress of reduction, the full assay being now assumed as the effective ley, because the tortas in all the haciendas continue to yield, in most instances, more silver than the assay indicated the ore to contain.

Jan. 21.—I have the honour to transmit herewith the half yearly accounts of the association to the 28th ult. The net returns of the company in Mexico for the six months, sum up as follows:

Calculated profit on Ascension	\$19,957	2	9
Profit on the four haciendas	26,082	6	11
Receivables	702	5	0
Quicksilver	2,787	5	24
Current stores	260	2	74
Return on Escalera repairs	537	6	22
San Agustín estate	259	4	43
Profit on sundries	30	3	84
Total	\$30,618	4	94
Disbursement on Sirena	\$2249	6	3
Partida repairs	1565	7	64
Salaries, general charges, and law ditto	4164	3	01
Interest on loans	1175	1	6
Net	\$41,463	2	5

The value of the company's realisable property in this country, as the board will observe by the statement in detail, amounts to \$236,269, being of current value 111,233, realisable in the course of time 125,036.

Jan. 24.—There has been a great fall, since my letter of 30th ult., in the produce of Ascension, which is now reduced to a small amount, and occasions much embarrassment in the regard to the haciendas. The respective extraction of the four weeks, ending the 18th inst., is as follows—585, 564, 566, 256 cargas. The points worked for ore will be found described in the accompanying copies of Mr. Parkman's reports; of dead works, the pozo of Varones, that of San Pablo, and cross-cut of San Ambrosio, have been suspended. The first showed none of the ore sought for; the second nothing of a cuerpo, opening to the southward; and the third continued barren. In San Ursula a cross-cut is driving to the Ascension vein, which Mr. Parkman expected to reach this week. The level of Varones was driven eight and a quarter varas; in the two latter reports the vein is said to look more promising. The cross-cut of San Febronia communicated in the second week with the pozo of San Juan de Animas, but their workings as yet give little assistance. A new point for ore was commenced in the same week at the entrance of this cross-cut, in a vein supposed by Mr. Parkman to be the vein known above by the name of San Miguel; his report that it contained "ore with a fair ley of gold," is subsequently extended to improvement, both in quality and quantity. The trial ore in the level of San Gregoria has as yet produced no returns, because the position of the work, it appears, made the attempt go without the limits of the clavo, which we are looking for by driving westward. The level of Santiago, in Sirena, has got into old workings, full of attle on the other side of the cross vein; in clearing through this attle, solid ground has been met with, containing ore. A trial of the ore in the main lode, on the southern side of the cross vein, is reported to look encouraging, but want of ventilation prevents further work on it for the present; the shaft of San Pedro is repairing. For further particulars I beg leave to refer the board to the accompanying reports and correspondence. As a natural consequence of the decline in Ascension, the haciendas have suffered for want of ore—having been obliged to suspend some of the arrastres, and put others on relieve, because there has been a decline also in La Luz and other mines, which has made maquileros scarce, the supply of ore in the market being unequal to the demand for the number of arrastres working. The finance estimate of the present month shows a considerable decline, owing to a diminution in the value of the effects at the mine and the haciendas, and of the ore on hand. The calculated surplus on the 18th inst. was \$102,800.

DOLANOS MINING COMPANY.

San Clemente, Dec. 16.—I have the pleasure to acknowledge receipt of your secretary's letter of 1st October.

Remittances.—It has been fully my intention to remit \$20,000 by this month's conducta (24th inst.), and I trust the delay we are again suffering in the process of reduction in the patio will not prevent it.

SAN CLEMENTE MINE.—In this mine there is nothing new to report, unless that the raising of ore, as well from the partido as by men working on ore, has further declined. In our tutwork bargains, the east end of San Crispin is again producing a small quantity of bronzes, of 4 mcs. to 5 mcs. per monton. The east end of the Transversal has produced a few cargas weekly, of 10 mcs. to 12 mcs., but at present the ore has been lost by a fissure which has crossed the lode. The east end of San Fernando continues barren.

SANTA BARBARA.—The cross-cut of this mine, south of San German shaft, has made no discovery. The cross-cut of San Crispin has again cut a narrow thread of blende, without silver. The west end of San Carlos, after having lost all trace of ore, now presents a vein of bronze, of the same quality as before.

SAN NICOLAS-Partido.—The produce from this source has been supplied from the old fillings, and lately from some workings nearer our reserves than we had hitherto permitted the buscones to approach, but we cannot expect the quantity to be long maintained, as both sources of supply are getting exhausted.

Men working on Ore.—Nine pairs of men in the rises of La Luz are working on rich ore, which at first was nearly a vara in width, but has now diminished to half a vara, and even a third; they are breaking, however, a handsome supply of ore, out of which we separate from thirty to sixty cargas weekly, of from 60 mcs. to 100 mcs. per monton. The bottoms of La Luz, in which ores were left, both rich and plentiful, are suspended till, by the advance of the lower level of San Fernando, the water finds a natural drainage, the expense of keeping those workings dry having become too heavy by hand drainage. Three pairs of men employed in the bottoms of San Mariano have continued to break ore as before; but this week the ground has become much impoverished, and I fear will shortly have to be abandoned to the buscones.

Tutwork.—The bargain of most interest at present is in the west end of San Fernando, approaching the ground which, in the level above (La Luz), has been so rich; and this week a quantity of ore has been filled in it, of a very superior appearance; and, so far as it can be known by its looks, there is little doubt of its being rich. If the appearance of this ore is not deceptive, it gives a new value to this part of the mine, as no silver has hitherto been met with at this depth. The workings of San Abundio have become much poorer of late. The south cross-cut of San Francisco has cut the lode under the winze of San Abundio in rubbish; the bargain is now continued at an end to the west.

The West End of San Nicolas.—On Buen Suceso lode, has lost the little vein of ore with which it commenced.

New Work.—When any of our present bargains are completed, I purpose turning the hands to cross-cut south from San Fernando level, opposite the San Nicolas shaft, as well as to try the vein of Santo Tomas at that level, as to communicate with the shaft, should it be found advisable to sink it to this level. The south cross-cut of San Abundio, to seek the veins of Bargaena, advances steadily, but nothing of importance must be looked for in it for several months to come.

DISPUTED GROUND.—All the tutworks proceed in about the same state as last reported. The west end of La Luz is never entirely without ore, and the little it gives is of a high ley.

MALANOCHE.—The measurements have been made, which show that we have still to drive five or six varas before we can expect to cut the lode of San Juan Nepomuceno by our cross-cut of San Pedro.

SAN FRANCISCO DE PAULA.—The original mine of San Rafael being quite

abandoned, I shall, in future, report on the sett which we are working under its own name.—The *West End of San Bonifacio* has, for the three weeks, presented little veins and bunches of beautiful ore, blue and native silver, with pyrites, in a matrix of quartz and greenstone; three or four cargas have been broken each week, the average assay of which will, probably, not be less than 24 mcs. per monton; and this week the end is in a highly promising state, showing a formal vein, of about one-quarter vara width, of the richest of this ore, which, by itself, would assay probably 40 mcs. Reliance cannot, of course, yet be had on the continuance of this vein; indeed, all that we have hitherto seen of the Veta Bella should prepare us to expect its disappearance immediately again, but there is more probability of its continuance now, than on any former occasion. The bottom of the winze of Buen Suceso is in precisely the same description of ore, though in very small quantity. A few weeks will prove the formality of this deposit, and if it should turn out as I hope, I shall be encouraged to undertake works adequate for a thorough examination, and the proper working of this lode; a shaft will be necessary, the best position for which will be about the boundary line of San Francisco and Veta Bella, where it would be useful to the two mines.

VETA BELLA.—The east end of San Bonifacio contains the same matrix as described in the west end in San Francisco, but the assay does not give more than 1 or 2 mcs. per monton at present. The cross-cut of San Juan de Rayas continues in the same way as reported in my last; a thread of galena has been cut through, which assays 4 mcs. per monton. As this lode of Rayas is found here so far to the north, there is some risk that that of Veta Bella may have become embodied with it at this level, which, if it should prove so, will be a great disappointment, as the object of the cross-cut is to try the latter. The water is considered to be a little higher than it was.

HACIENDA LA GRANJA.—The cold weather has thrown the reduction of the rich ore of San Nicolas back again, as it did last year. There is, no doubt, something in the nature of the ores which makes them more requisite for them than for the poorer ones, but that there is nothing in them really opposed to the patio process has been frequently proved, when we have had these ores in the summer season, when the loss of ley has been, perhaps, below the general average. We have just washed our first rich torta, the average assay of which was 27 mcs., and it has lost 33 per cent., which loss, however, will, I hope, be recovered in the residue; this torta was five weeks in the patio. The next torta (average assay 35 mcs.) has been four weeks in the patio, and the reduction is still in arrears; a third, which assayed about 40 mcs., is in the same predicament. As soon as the difficulty attending the reduction of these ores was known, I have separated all the richer class (which is the occasion of the difficulty) for reduction, either by some other process, or to wait for warm weather. The ley of the next torta of San Nicolas, consequently, came down to 22 mcs., which is now in process of reduction, and will give us an experimental proof (by the time it will take) whether the difficulty consists in the richer ores or not. I have ground twenty-two cargas of these richer ores, assay 64 mcs. per monton; and sent two cargas to a smelting-house, five to the German barrel establishment, and I have put one monton in the patio crude, and another calcined, and on the comparative results of these trials I shall be able to determine what process will be the best.

MONTHLY ACCOUNTS FOR NOVEMBER.—Loss \$7528, which loss is owing entirely to the delays of the patio, and is, in reality, only nominal.

Statement, showing the Results of the Mines and Haciendas in the Zacatecas District—November, 1844.

Mine.	Profit.	Loss.
San Clemente	\$2780 7 7	
San Nicolas		\$7111 7 0
Malanoché		53 0 0
Veta Bella		1904 4 0
San Rafael		937 5 0
Loreto		59 3 0
Santa Barbara		1537 3 0
Pozo Rico		77 0 0
Haciendas	1371 4 1	
Loss on district	7528 5 3	
	\$11,681 1 3	\$11,681 1 3

San Clemente, Jan. 15.—I have the pleasure to acknowledge receipt of your secretary's letter of 1st November. The conducta for Tampico will, no doubt, start next week, and by it I shall remit \$20,000 for shipment to you through Messrs. Jolly and Co.

SAN CLEMENTE MINE.—I have little to report since my last, except that our reserved workings in the roof of San Fermín, having continued to fall off in produce, have been given up to the buscones, which keeps up our extraction of ore. Two pairs of men on ore have been put into our new working on the Transversal, to try for a week or two whether it will answer in this mode; if it does not, this will also be given to the buscones. Our tutworks in the east end of San Fernando, and that of San Crispin, are without improvement.

SANTA BARBARA.—Our tutworks continue in precisely the same state as reported last month.

SAN NICOLAS MINE, AND DISPUTED GROUND.—The reserves of San Mariano having become too poor to work by paradas d'obra (men on ore) have been given up to the buscones, and a large number have crowded into them, and since last week we have a considerable increase of extraction. The reserves in the roof of La Luz level have been worked out, and the men are now divided between the bottom of Santo Tomas, a slope in San Francisco, and the bottom of La Luz, the quantity of ore they break being smaller than before, as the veins are everywhere narrower or poorer. The west end of San Fernando has communicated with the first winze of La Luz, and drained it, thereby laying open the ores which had been left there. We are now engaged in levelling this work, so as to continue the end towards the other winzes, where the ore was still better. Although all these winzes of La Luz remained in very good order, they had depreciated in value as they descended, which promises rather unfavourably for their further extension downwards, but, as the ground here is quite untried, it is very possible that they may continue, and that new riches may be found in depth.

Tutwork.—Those of San Abundio have continued poor, though never without ore. The west end of San Francisco, which is about communicating with the winze, is in the same characteristic, and there is always hope that other good deposits may be met with like the one we first cut in San Abundio. The east end of San Abundio has communicated with the west end of Dios nos Guie, and the whole level now takes the latter name. The west end of San Abundio (now Dios nos Guie) will shortly communicate with the level of Santiago. In the workings of Santiago (the winze and the west end) occasional samples of ore are met with, which encourage us to proceed with these works. We have commenced a cross-cut from San Fernando level to the shaft of San Nicolas, which will cut through the lode of Santo Tomas, and try it at this level. The cross-cut of San Abundio south, to seek the lode or lodes of Bargaena, continues without discovery. The west end of La Luz continues on ore, and in increased quantity since the last week.

MALANOCHE MINE.—The upper west end of Santiago has been suspended, the lode being evidently lost, and it is not deserving of expense to seek it, and, by the advance of the lower level, light can be thrown upon its probable position. The north cross-cut of San Pedro has not yet cut the lode we seek of San Juan Nepomuceno.

SAN FRANCISCO DE PAULA.—The rich vein of ore in the west end of San Bonifacio, reported in my last, and which assayed 50 mcs. per monton, has failed since the last two weeks, and the end now produces very scanty samples of inferior quality. The winze, on the other hand, has greatly improved, having produced equally good ores, and much wider; the report this week, however, is less favourable. We shall have a better acquaintance with this lode shortly, by putting buscones at partido into the level, which will be done as soon as little work of ventilation, now in hand, is completed. An end has been opened on the east again, on the level of San Bonifacio, with occasional samples of ore.

VETA BELLA MINE.—A west end has been commenced in this mine, on the level of San Bonifacio; this, as well as the east end, continues barren. The cross-cut of San Juan is at length out of the Rayas lode, and three or four weeks more should bring us to the Veta Bella lode, which we look for with great interest.

HACIENDA DE LA GRANJA.—The remaining rich ores from the previous month have been washed with the same heavy loss of silver advised in my last, which gives a very unfavourable result to the monthly average. Since the separation of the richest and refractory ores, the reduction has been much more favourable, and the loss of silver hardly exceeded the usual average, thereby proving that it was the presence of those ores which occasioned those bad results. The only trial of the rich ore which has been completed, is that of two cargas smelted, the result of which has been as bad as that of the patio—a loss of 33 per cent. The illness of the owner of the barrel hacienda has prevented his attending to the trial sent him; but our own trial in the patio, after reverberation, although not yet completed, already proves that nothing more is necessary, and no process better adapted to these ores than that of the patio, with only a previous roasting; the monton thus treated, now nearly ready to be washed, will give even a higher ley than the general average.

Jan. 16.—Stones from the winze of San Abundio, and from the west end of San Francisco, have to-day assayed 39 mcs. and 70 mcs. per monton. There is a great deal of whole ground here, if the ore would but "form body."—I inclose the usual monthly accounts, showing a profit on the district of \$29,955 7 8.

Statement of the General Result of the Mines and Haciendas in the Zacatecas District—December, 1844.

Mines.	Profit.	Loss.
San Clemente	\$3,619 0 5	
San Nicolas	29,177 6 7	
Malanoché		\$ 813 4 7
Veta Bella		1,153 0 5
San Rafael		1,270 6 6
Loreto		76 1 6
Santa Barbara		984 6 0
Haciendas	1,464 3 6	
Gain on district		\$29,955 7 8
	\$34,254 3 3	\$34,254 3 3

REAL DEL MONTE MINING COMPANY.

Mineral del Monte, Jan. 27.—Your despatches, dated 20th November, arrived here on the 18th inst. I have attentively perused Mr. Rodgers's very interesting account of the analysis of the Santa Brígida ore, and trust it will assist us in introducing an improvement in the beneficio, which, hitherto, has been so little understood. I agreed in opinion with Mr. R., that calcination will prove beneficial previous to its being put in the patio. The barrel process has, however, answered best on this ore; but, in order to procure a good calcination, it is necessary to mix with it more *metales azules*, from the Biscaina or Acosta veins. The results at Sanchez, for the last four months, have averaged about \$84 per carga and this amount, I calculate, will be reduced in our new establishment at San Antonio to less than \$8. A large proportion of the ore reduced at Sanchez hacienda, in December, was from the large heap of poor ore, which had been put aside for the purpose of being at a future day beneficiated at San Antonio; but which, owing to a deficiency of good ore from the mines during that period, we were obliged to remit to keep the hacienda fully employed; the average assay came to 9 mcs. per monton, and the produce to 8 mcs.—showing loss of 181 per cent. But you will perceive, for some months past, the results have varied considerably, ranging from 53 per cent. upwards. I fear, therefore, the correctness of the assays cannot be always depended upon; and, if we take about 10 per cent. as an average, I think we shall not be far from the truth. The actual produce of December amounted to thirty bars—value, about \$36,000. This sudden decrease in the returns, as already stated, was owing principally to the rising of the water at Terrores, and to a notable diminution in the quantity of smelting ore from other parts of the negotiation. Under these circumstances, I lost no time in taking decided measures for reducing the expenditure; and it will be seen, by the statement of costs and returns, herewith forwarded, that the mine cost amounted only to \$25,410—while the aggregate, including the hacienda, general expenses, charges on produce, amounted to \$46,188 being about \$11,000 below the estimate; still, however, we could not avoid sustaining a loss of about \$10,000. The produce for January will not exceed thirty-one or thirty-two bars, but the costs will be reduced in about the same proportion. I noted in my last the extraordinary increase in water which had suddenly taken place in the Aviladero adit, north of Dolores, which occurred on the 30th ult.; in the first twelve hours it rose thirty-five feet, and on the following night the rods in the diagonal shaft were disengaged, and on the 1st inst. it rose to the Aviladero, from which level to the old adit twelve inch lifts were fixed in all possible dispatch, and which were completed and put to work on the 13th inst.; and I have now the satisfaction of stating, that, although the stream from the level north, has not perceptibly diminished, the mine was again drained to the Santa Teresa, or 216 vara level, on the 22d inst., which has enabled us to resume the driving the latter; and, also, the San Juan level, towards San Cayetano, and which, as you are already aware, was on the eve of cutting the main part of the vein, which was expected would effect the drainage of the new plan of San Enrique, situated at twenty-four varas east of San Cayetano, below the 137 vara level, and I am now happy to state, that, although so little has been done since the resumption of the driving of San Juan level, it has had a very beneficial effect in lowering the water in the winze, which this morning was found nearly dry, and there is every reason to expect a good produce from here this month. Within the last week, an improvement has taken place in Taylor's level, driving east of Terrores, and the last vara driven produced about twenty quintals of smelting ore; showing that a decided change has taken place in the vein—the slopes just over it being comparatively poor. We consider, therefore, under these circumstances, that it is advisable, by all means, to carry out the plan suggested by Mr. Taylor—that of sinking a winze below the level, with as little delay as possible—and we have accordingly arranged to commence preparations for this work in the ensuing week.

At Acosta, in the Aviladero, driving east of San Pedro, we have just cut into one of the western parts of the Santa Brígida vein, which appears to be composed of good azogue ores. The Acosta vein at this place has all the appearance of a fine course of ore, two varas wide, but it contains a ley of only from 9 to 16 mcs. per monton, the bulk being composed of a fine grained espigueta, much resembling good smelting ore, which is a most singular circumstance, seeing that the situation is similar to that of the rich bunch of ore discovered in 1842, just over this place at the forty vara level. The whole length of the San Antonio, or eighty-one vara level south, on the Santa Brígida vein, is now dry, and we have already commenced two new planes below, one of which, called San Rafael, is producing ore in pretty good abundance, containing a ley from 20 to 30 mcs. per monton. Although, for the present month, we cannot expect to increase the returns from the patio and barrels beyond the estimate, yet, it is possible we may do so from the Fundacion, and every nerve shall be stretched for this desirable object; and, looking at the many productive points which are being brought into work, it may reasonably be expected, taking into consideration the present reduced rate of expenditure, that in the month of March or April we shall begin to repay some part of the heavy losses we have lately experienced.

The mine of Rosario, in the Pachuca district, is, I am happy to state, going on in a satisfactory way, and is now producing about 200 cargas of ore per week, assaying on an average 12 mcs. per monton. We found great advantage from adopting the method of paying a certain price per carga, which above a month ago was fixed at one dollar; but we find the men got too much money even at this price, and we have resolved to reduce the price next week, in the best labors, to one half dollar. If the ore continues extending in length eastward below the San Guillermo level, the returns will soon be considerably increased; but, even at the present moment, it is leaving a profit sufficient to wipe off the debt in the course of a few months. Suppose the twenty cargas give in the patio only 10 mcs. per monton, this would be 200 mcs.; say at \$84=\$17,000. The mine costs, including every thing, amounts to about \$400, and the beneficio, say at \$30 per monton, \$600, which would leave a profit of about \$700. Seeing that the ores from the Regia mines are soon likely to increase, I have been negotiating with a young man in Mineral del Chico, who has a good character, named Don Manuel Villan, to reduce a portion of the ores of Rosario on maquila. His hacienda, however, is small, and can barely reduce 100 cargas a week; the overplus I expect may still be reduced at Regia without inconvenience. I am glad to inform you, that the mine has paid up the balance due on the bars last introduced, but you will perceive, by the account transmitted herewith, that the funds here will not permit our making a remittance by this packet beyond the amount of 400, which I have drawn on the directors of the Pachuca Mining Co. I hope, however, we shall be able to do better next month. It is a circumstance worthy of notice, that the water in the northern mines has lately subsided faster than at any former period. At Moran, for instance, during the driest period of last year, about the beginning of July, the lowest point to which it sunk below Las Animas level was 43 varas 5 dedos; whereas, it is now sinking at about a vara per week, and is already down about 443 varas. The mine of San Felipe is dry to within one vara of the bottom of the shaft, and the mine of Rosario, belonging to Don Mariano Herrera, is, I understand, also nearly dry—no doubt, the principal outlet to the Aviladero.

TAMAR SILVER-LEAD MINING COMPANY.

We find that the ground in Wheel Hancock shaft is still improving; the men have sunk 4 ft. 6 in. in this last week; in cross-cutting the result is not so satisfactory, only two feet having been driven during the past week. At the North Mine the prospects are still favourable, and even becoming daily more so; the lode is one foot wide in the fifty end south, with good stones of ore; the forty end is also yielding some good work, while the thirty end is poor, and still in black ground. This success in the North Mine will naturally assist the operations of the company generally, as it will tend to relieve the South Mine from the incumbrance of working the North at their own expense; and it has already created a profit of about 9000, on the working of the old level, and that on limited operations, as it was considered preferable first to exhaust the old mine. The South Mine continues just as usual—the 125 end still looking very well. The increasing prosperity of the mine will be more clearly seen by the following authoritative statement—a comparison between the product of the ninety-five fathom level, with the receipts of the mines in January and those of February. In the former month the ore yielded 11 tons 13 cwt. of lead, which, at 10l. 17s. 6d. per ton, gave an amount of 126l. 7s. 2d.; and the wages of the seven men engaged in this level, being 7s. 6d. in the 1l, their receipts were 46l. 7s. 6d., or rather more than 6l. a man. In the month of February the ore yielded 18 tons 9 cwt., which, at 22l. 5s. 6d. per ton, produced 410l. 15s. 3d. and the lead alone, at 11l. 7s. 6d. per ton, produced 209l. 15s. 2d.—being an increase of above 80l. in the profit of the company, while the share of the men, at the same rate of 7s. 6d. in the 1l. for the produce of the lead, amounted to 78l. 13s. 2d., or above 11l. a man. This appears conclusive evidence of the position and prospects of the enterprise: 22l. 5s. 6d. per ton of 21-cwt. for a parcel of 108 tons, was procured from the Battersea Smelting and Refining Works during the last week—making for the parcel, an amount of 2405l. 14s.—a price much higher than any obtained for some time past.

PACHUCA MINES, MEXICO.—Letters have this week been received from the agents of the company, conveying information of a communication having been made with the old workings; the lode is stated to be very productive, containing rich sulphuret of silver. A new shaft has been sunk from the surface, so as to afford a more perfect ventilation, to the absence of which the former suspension of the mines is attributed.

DUNDYVAN IRON-WORKS.—Some of the largest plates that were ever made in Scotland were rolled at these extensive works on Saturday last. The weight of the slab from which each plate was rolled was 1700 lbs., and when finished measured 16 feet in length, 3 ft. 2 in. in width, and nearly an inch thick; the weight of each plate varying from 10 to 14 cwt. Nor is the weight and dimensions of these plates their greatest novelty, for they are intended to be used as walking-beams, and being lighter and more durable, will, it is likely, soon supersede the necessity of the present unwieldy cast-iron beams.—*Glasgow Argus*.

The Mining Journal.

No. 499.]

ENLARGED SHEET.

[MARCH 15.]

Original Correspondence.

REAL DEL MONTE AND BOLANOS MINING COMPANIES.

Sir,—I am sure you will give me an opportunity of replying to an anonymous writer, signing himself "A Shareholder," in your Journal of the 8th inst.—Anonymous writers are usually considered the most contemptible set of men in existence; and, whilst trying to falsify others, prove themselves perfectly void of truth, and the only mode of meeting them is by facts. He sets out with stating, that *I have only within a few days become a shareholder, and my stake is only three or four shares.*—I hold 375 shares, and thirty blank debentures in the former, and fifty shares in the latter company; and I refer this falsifier of truth to my stock broker, Mr. Richardson, Change-alley, Cornhill, who will state, that I have not only held these shares for days, but for months, and I might almost say, years. At the meeting in July, the directors were unwilling to allow me to interfere in the affairs of the company, because I was only a scrip holder. I immediately said I would register any number of shares they considered would be a respectable qualification. They named ten Real del Monte and five Bolanos, the number I now stand registered for.

How is it that gentlemen, who have been partners in both concerns from their formation, are blind to their own interest? Are they blind? they receive their salaries, although the proprietors receive not a penny.

The proposer has not found one to join him.—Sir, I have received 167 replies to my circular, and only one dissenting from my suggestions.—viz. Colonel Veitchell—who apologised to me at the meeting for the expressions in his reply; and after the meeting, told me before others, that he approved of my propositions.

The directors receive only one half of their salaries.—The deed provides that there should be twelve directors, and gives them a sum as their salaries—I believe, 1,200*l.*; there are now seven, who receive 700*l.* Does this anonymous writer consider the directors so bare-faced as to suppose they are entitled to 1,200*l.*, when they are only seven in the place of twelve.

Manager.—The founder of the concern—principal support of the companies—his many years' anxiety to bring the concerns to a state of profit, during which time he has received only three-fourths of the salary to which he is entitled. The proposition to dismiss the manager is so monstrous and uncourteous, that comment is superfluous.—Better had the concerns never existed, than to see millions thrown away on them.

They have been the principal support of Mr. Taylor; and, perhaps, I might more truly say, of the directors. He may have received but one-fourth of the manager's salary set forth in the deed. Has he given the proprietors of the companies one penny of the profit he promised them when he founded the concerns? Do you find one word in my circular that Mr. Taylor is to be dismissed? To be deprived of his salary: yes; but to be consulted as a scientific man, and well paid for his opinion, which, I hope, will prove of more value than hitherto: Or, make him a director.

Secretary.—I am perfectly aware the two concerns were managed by one secretary and set of clerks at the formation, and I can only consider it was a job when others were admitted. How many railway companies are under one secretary and one set of clerks? or, how many accounts are kept by one merchant and set of clerks? and in both instances the affairs of these two concerns are quite insignificant to either of the other, in labour or responsibility.

Rent and office expenses are paid by both companies jointly.—Mr. Taylor, the landlord, has his lease and tax papers to show, and he can state how many companies, besides our two concerns, pay him rent. Housekeeper and manager may be convenient for him, but are they or himself to be found in the management of other mining companies?

Now, Sir, you have refused to give me the name and address of your anonymous correspondent. I told you I thought he either sat as a director, or was under their direction. How is it he happens to know I was a small shareholder, or that the directors had tens of thousands at stake in the concerns, without seeing the share-book, which is confidential? The language is very similar to that used by the chairman at the meeting, and also similar to Colonel Veitchell's reply to my circular. Was Colonel Veitchell's reply really his own composition? It little signifies your anonymous correspondent may be. This reply will at once stamp him a void of all truth, unless he, by facts, can contradict my assertions; and when I move for a committee to investigate the affairs of the concerns, with power to call for all servants, books, and papers—yes, and the chairman's confidential book, and Messrs. Tindal and Rule's correspondence—the lease of the premises—the housekeeper and messenger, and Mr. Taylor with his rent-roll; we shall then know whether the manager was not absent from the concerns in Wales for months;—whether the directors have been blind to their own interests—whether one secretary and set of clerks might carry on these concerns, or whether my suggestions in my circular are so monstrous and uncourteous that comment is superfluous.

79, Oxford-terrace, Hyde Park, March 14. RICHARD TYRRELL.
P.S.—Sir: you will have the kindness to send a copy of your Journal to each proprietor, as per list sent.—R. T.

REAL DEL MONTE MINES.

Sir,—I have read with much satisfaction, the letters which appeared in your valuable Journal of the 1st and 8th instants, from "Mr. Edmund Turner"—"Mr. Richard Tyrrell," and "A Shareholder," respecting these mines. I trust they will tend to arouse the unfortunate shareholders in an investigation into the past and present management, as the frightful depreciation in the value of their property demands this; upwards of 250,000*l.* has been invested in these extensive and important concerns; are receiving no dividends, and the shares, which at one time commanded more than 1,500*l.* each, will not now realise 5*l.* Under these circumstances, the suggestions of Mr. Tyrrell, for a reduction of the expenses in London requires immediate attention. These expenses are, however, very trifling, when compared with those of Mexico, which amount to from 700,000 to 800,000*l.* annually; and I cannot divest my mind the impression, that the requisite check does not exist in the country, either over the disbursements, or the produce of silver from the mines. In the year 1843, the bars of silver remitted to England, valued 184,151*l.*; and, I suppose, the annual yield is about the same in amount. Yet, the whole of this gross revenue is absorbed in expenses, and in exploring into the bowels of the earth, at the whim or caprice of those who may, for the time, be in charge of the mines; in fact, all the profits are swallowed up in carrying on gigantic works, and in supporting extravagant establishments, whereby the shareholders are not only deprived of dividends, but their property has been depreciated to the enormous extent already named. Under these circumstances, it is high time that some decided measures be taken to investigate into the past and present management, as also into the future prospects of the concern. A committee of the shareholders should forthwith be appointed to do so; this is absolutely necessary to restore confidence—for, however respectable the directors may be, we can only judge of their good or bad management by the result. The mines are admitted by those who are competent to form a correct opinion, to present very favourable appearances, and the actually experienced in the reduction of some of the ores has been overruled by the introduction of the *barrel process*, which has been attended with complete success. A considerable saving will, therefore, be effected in the consumption of quicksilver; and, in addition to the valuable returns now made by some of the mines, a very large profit may confidently be expected from the *great and accumulating stock* of inferior ores, which may now be turned to good account by the *barrel process*—indeed, there cannot be a question as to the value of the mines, and that they would make a handsome return to the shareholders under more efficient and better management; and it is, therefore, for those who are interested in the success, to afford their aid in the adoption of such measures as may be best calculated to effect so desirable an object, and, at the same time, to elucidate such information connected with the affairs and prospects of the company as may tend to inspire public confidence. When this is more restored, the shares must command a price in the market that will reflect credit upon the directors, and be satisfactory to those who have embarked their capital in these mines, many of whom were induced to do so, in consequence of the high opinion they entertained of the gentlemen connected with them. I am informed, that we cannot despair of having a dividend one of these days, when the shares

will immediately command a very high price; it is, therefore, for the present adventurers to consider as to the propriety of sacrificing their property at the present price. I have purchased largely, for the purpose of making an average, some of my shares having cost as much as 80*l.* each, and those who are desirous of making a profitable investment will be wise in giving their attention to the "Real del Monte Mines."

Lombard-street, March 13.

VERITAS.

REAL DEL MONTE MINES.

Sir,—A copy of a letter was enclosed to you (and which appeared in the last *Mining Journal*), signed by Mr. Richard Tyrrell, of Oxford-terrace, Hyde-park. Your correspondent, in his remarks, appears to disapprove of the sentiments contained in that letter, but to which I cordially respond—not that I think it involves any suggestion of any great importance, but that every measure should, under existing circumstances, be adopted, to curtail the expenses of management; but that which I deem of much greater consequence is, that the more influential holders of the Real del Monte shares should at once convene a meeting, for the purpose of entering into a strict inquiry as to the management of the mines abroad; for dispatches are received, month after month, holding out promises, stating that favourable points in the mines are appearing in various directions, and that immediate returns of consequence may immediately be anticipated. But, Sir, where is the realisation of these promises? I do not say it is so, but it has very much the appearance of being a *willful delusion*. Why not send out an able officer, of known integrity, to act as commissioner; this would at once be attended by results of a highly satisfactory character. We are told that the property is of great value; why, then, is it not efficiently worked? The public estimation as to the manner in which these mines are conducted, may be inferred from the value of the shares in the market—the maximum price is now 4*l.* 15*s.* for the unregistered shares, and something less for those that are registered; this appears to me to be a most disgraceful state of things, and calls aloud for the adoption of the most energetic measures on the part of the great body of shareholders. Let each individual proprietor exert himself, this will produce collective co-operation—we shall then find the directors moving, and, soon afterwards, the extensive and highly valuable mines of the proprietors will yield something more substantial than promises. We are now told that the returns will henceforth be regular; this is the language held out by the last letters from Mexico; we shall soon see whether we are again to be disappointed. These mines are certainly a notable case of hope deferred; nevertheless, I do anticipate a better state of things. It affords me much satisfaction to find that the shareholders are beginning to stir; let there be no apathy, but unanimous exertion, and, ere long, the proprietors may expect a handsome dividend, as the reward of their exemplary patience; this, probably, would long since have been the result, under a wise, prudent, and bold management.—May I request the advocacy of your influential Journal, in behalf of the thousands who embarked their property in an undertaking which they conceived would have yielded them great interest; and which, from the prior history of the mines, would have been the case, but for the reasons which I have above assigned.

A SHAREHOLDER, NOT OF A FEW DAYS' STANDING.

London, March 11.

BLAENAVON IRON COMPANY.

Sir,—I beg to thank you for the insertion of my letter of the 8th inst. Having occasion to call on Tuesday at the offices, I found the directors had just awakened from their slumber, and fancied they saw a necessity for completing their long begun furnaces; for myself, I can only attribute this delay to their want of zeal for our benefit, besides acting to their detriment as tradesmen, who ought to take advantage of the passing events. There is another and an important subject to us—viz., the want of a London warehouse, with a stock—What is our situation and means of delivering our goods? We now send them to Newport, and how often is it parties have to wait there a week and ten days till the iron arrives—I will leave our executive to say, feeling ashamed such a property and its resources should be so blighted. Why do not our directors imitate the Bank of England, and bring all their resources and means into the market, to meet the growing demand of the times?—Why allow it to waste itself in the mountains of Blaenavon. It is the bounden duty of every director to give all the facilities for disposal of our manufacture, and to look out for new fields for speculation. We are able to meet the demand, I am sure, with a vigorous and active executive, and the sooner the present men are checked in their sloth, so much the better for

A SHAREHOLDER.

London, March 13.

VICTORIA IRON-WORKS.

Sir,—In your Journal of the 1st inst., in a paragraph headed "Fortunate Speculation," it is stated that the above-named works "have been purchased, or rather taken to, by the Monmouthshire and Glamorgan Banking Company, to cover a debt of about 16,000*l.*;" that the banking company have since effected most important modifications of the lease with Sir B. Hall, and availed themselves of the present prosperous state of the iron trade to sell the same at the price of somewhere about 120,000*l.* to 125,000*l.* Now, surely, Sir, there must be some mistake here; it is possible such a result can have been come to, without a dereliction of duty, or forfeiture of honour, on the part of the committee intrusted to wind up the affairs of this company. No doubt some of your numerous readers must have had an interest in this unfortunate undertaking, and can, therefore, let the public know the terms of the lease originally granted by Sir Benjamin Hall; and, probably, the particulars of the modifications of such lease obtained by the banking company; also the amount for which the latter had a claim on the works; and what sum it (the Banking Company) paid for them.—London, March 12.

W. A.

The announcement of actual sale was certainly premature; but we believe negotiations are now pending, with every probability of a speedy conclusion, by which the transfer of the property from the Banking Company will be effected. We understand that several of the bank shareholders are very uneasy at the directors expending money thereon, at the rate of at least 400*l.* per month, and nothing coming in in the shape of returns—one actually declaring, that he will apply for an injunction to restrain the directors at once.]

DUTY ON TIMBER USED IN MINING OPERATIONS.

Sir,—Now that Sir Robert Peel has become so generous in relieving one part of the community, in allowing many articles to come into this country duty free, I do not see any reason why another part of the community should not be benefited by his present fit of generosity—I mean that part of the community engaged in mining pursuits, and, more particularly so, those engaged in collieries and ironstone works. In most of the works which are, at the present time, wrought for coal and ironstone, owing to the roofs being crushed or drawn from the working of some measures below that working, either previously, or at the same time, being carried on together, or to the roofs being of a very tender nature, owing to the material composing the measures above; and generally the warrant being of such a description of clay that it swells like lime upon the absorption of moisture or the action of the air; and also to the many faults, dislocations, and more particularly, the many fractures in the roofs of a great many of the ironstone measures, that the quantity of timber and post wood requisite for the maintenance, and keeping in a state of repair, the levels, drifts, air headings, and workings, are very considerable, and form a very heavy item in the expenses of working those descriptions of mines; and, consequently, the demand for post wood being great, and which has been considerably increased by the great quantity consumed upon railway works, in fencing the lines, and forming sleepers, that there is a scarcity of a good quality of post wood in the country, except at a most exorbitant price; that many of the workings are very insufficiently timbered, and which is rendered more so by the miners having to pay for the post wood generally; consequently, they are naturally anxious to recover it, or some of it, from the workings which are finished, and so save the expense of buying fresh post wood; and also to the quality of wood so used being either white wood, or limbs of trees, and Scotch fir; that the decay in many of the workings are very rapid, and the timber unable to sustain the superincumbent weight; and that, owing to these causes, so many fatal accidents have taken place, and still continue to do, I may almost say daily, that I think such would be very considerably lessened by the Government allowing timber, used and consumed in and upon such works, to come into this country duty free from abroad; and post wood, being made from the tops of the trees fallen for timber, and which generally is left to decay upon

the place where it is fallen; also, to allow the post wood to be cut up in suitable lengths, in those countries from whence it is exported. Post wood is from three inches to nine inches diameter, and by its being cut up and hewn into proper lengths and shapes abroad, would prevent any expense being incurred upon such timber, except what was really required for the mining operations. That Quebec red pine tops would form a most capital post wood is, without a doubt, from its being a straight timber, and one which resists decay well, and which might also benefit the British possessions in North America. Some of the large coal districts would be more benefited by having the Baltic post wood, on account of the less expense of transit of such timber over the Canadian; I am positive that if the coal-works, &c., were better timbered, and that timber of a better quality to the generality of what is used—and which, in some works, decays in the space of three or four months—that accidents, consequent upon the falling in of the roofs, would become of rare occurrence, and that the heavy expenses and frequent overthrow of some part of mining operations would be very much lessened; and it would also greatly tend to keep the air-ways in a proper state to allow a free ventilation, which is so absolutely requisite for the good and safe working of all mining pursuits. It is with a view of ameliorating the condition of the miner, and also of improving the resources of the proprietor, that I request the insertion of this letter in your valuable Journal, hoping that it may attract the attention of those engaged in such pursuits, and also those who have the welfare of the miner at heart, and that by the united efforts of both parties, an object so desirable may be carried into effect.—Sandbach, Feb. 27.

J. H. W.

PROPOSED REMISSION OF DUTY ON BRIMSTONE.

Sir,—I beg to hand you a copy of the memorial forwarded by the directors of the Wicklow Copper Mine Company to Sir Robert Peel, against the proposed withdrawal of the import duty on brimstone, under the hope that he will give the subject the serious attention it deserves, and be induced to continue the small protection which is so very important to the mines producing pyrites, and the large body of persons, shipping, &c., dependent on that ore for employment.

EDWARD BARNES.

Ballymurtagh, March 10.

TO THE RIGHT HON. SIR ROBERT PEEL, BART.

The Memorial of the Directors of the Wicklow Copper Mine Company respectfully Sheweth,—That about five years since, when the Sicilian Government granted a monopoly, and imposed an exorbitant duty on the export of sulphur, your memorialists were induced by the manufacturers in England (who were, in consequence, most seriously inconvenienced) to commence works of a very extensive character, including sinking shafts, and erecting machinery, at a great cost, to provide a substitute for this essential article to British manufactures; and that they have succeeded in raising pyrites, containing upwards of 40 per cent. of sulphur, to such an extent, as to make these countries nearly independent of all foreign supply—the almost immediate consequence of which, was the destruction of the monopoly, and the reduction of the price of brimstone to a lower rate than it had been for many years before. Your memorialists have since continued to produce large quantities of this pyrites, which the English consumers evince a desire to continue the use of, and to patronise, from a sense of the service thus rendered them, but the profit was brought down by the competition to little more than 4*s.* a ton; at this they, however, were willing to continue the works, affording employment to a very large, and otherwise destitute, population. They have just learned that in the proposed reduction of duties, the only protection which they enjoyed against foreign sulphur, of 10*s.* 6*d.* per ton, is about to be removed; this, though nominally small, is vital as to them (one ton of brimstone being equivalent in produce to three tons of pyrites), and would be most disastrous to their mine, which has had severely to struggle against the large imports of foreign copper ore. While your memorialists hail with much gratification the prospect of improvement to trade generally, promised in the contemplated change of duties, they respectfully presume to suggest that, if compatible with the Premier's general views, he should not destroy a branch of trade so recently and beneficially established in Ireland, by which in this one locality (the Vale of Ovoca, county Wicklow) about 3000 persons get constant employment, and, though at very small remuneration, they would immediately become destitute, if deprived of this means of support, and were the mines to cease work, they could not be resumed at any moderate expense or time, should the price of brimstone be again raised by the Sicilians, their only effective competitors being then prostrated. Your memorialists would also beg leave to add, that they have just entered into a contract for opening and improving the harbour of Arklow—a work of considerable expense, but seemingly justified by the large export of this sulphurous ore (nearly 50,000 tons annually), and the great want experienced for many years along that coast of some place for safe shipping. Your memorialists feel unwilling to trespass at any length, but would feel most happy in personally or otherwise, affording any information on the subject of their request, to which they most respectfully solicit your favourable consideration.

Signed, by order of the board,

RICHARD WRIGHT, Chairman.

RAILROADS IN SPAIN.

Sir,—Lest the "Idler in the Asturias" should consider his statements on Railroads in Spain, published in *The Mining Journal* of the 1st instant, believed and tacitly admitted, because undenied, I trouble you with this letter for publication in your valuable columns. I propose, then, in the first instance, to take the several points in the letter of your correspondent *seriatim*, and to correct them as I proceed. But really, Sir, on again looking at his letter, I think that the whole structure is so badly built, it had better be pulled to the ground, and new premises erected.

First.—Your correspondent has his doubts on the fidelity of the Spanish Government; and characterises the people as "famous for their enmity to strangers and all foreign innovations." I might answer the accusation against the Government, by challenging your correspondent to a proof of one act of *commercial infidelity*,—or, in fact, of infidelity, public or political, of the present administration. Under every Government of Spain, private and commercial faith has been preserved—during the civil wars, and when the country was overrun by the armies of Napoleon. In proof of this may be taken, the immense fortune amassed by Mr. Heredia's iron manufactory, established during the civil war; the Almaden Mines, of Baron Rothschild; the Canal de Castilla, from Reynosa to Palencia, Segovia and Medina de Rioseco, about 40 Spanish leagues, or 120 English miles; the Aragon Canal; the Bank of San Fernando; the Bank of Isabel II., &c. &c. The High-road, from Leon to Valladolid, which your correspondent says is not finished, I have the authority of a gentleman who has lately travelled on it for asserting to the contrary. The road from Leon to Valladolid is completed, as well as the road from Leon to Mayorga, and from Valladolid to Medina de Rioseco; and contracts have been entered into with the two provincial deputations, for the completion of the road to Madrid before next November. The only acts of injury and wrong that may be brought against the Spanish Government are those perpetrated to political offenders. I am not prepared to defend the sacrifice of life which has taken place in the case of General Zurbano; but, it must be recollected, the whole nation smarted under the sting inflicted on it at the revolution, and the dread of a renewal might have forced the Government to acts of extremity. But is Spain more tyrannical to its Government offenders than Austria, than Russia, and, if I please the north eastern nation of Spain but a few years back, even of France? And why should Britain, proud of her liberty and her constitution, be unmentioned? I contend, Sir, that Britain has, under times of equal excitement and equal fear, been as harsh to political offenders as Spain. At the present day, England does, in Ireland, just what the Spanish Government is doing in Spain. Ireland is kept in peace by the awe of England's military power; Narvaez and his Government are strengthening themselves, that the civil foes to the peace and prosperity of Spain shall be kept in subjection and order by their power. The view we have to take, however, is a commercial one; and here, when I state that Spain is daily improving, and that home and foreign confidence are gaining ground in the present administration; in proof of my statement, I have only to refer to the general advance in Spanish stocks. It is, Sir, the opinion of an eminent commercial authority, that Spain "has all the natural elements of power, which require only a wise and strong Government to direct them." This, I trust, for her welfare, and for her one great and noble people, is establishing itself.

In contradiction to the invective against the inhabitants of Spain, I might quote every author of importance who has written on them,—they are "an industrious and well-disposed people."

Your correspondent, in the second place, sagely remarks, "it would require some secure statistics on which to form a railroad in Spain," and, more particularly, is this assertion thrown out as a mere

from Aviles to Madrid. And on what are the statistics, Sir, think you our "Idler in the Asturias" builds the question of the success of the above scheme? Simply, Sir, that "one coach which starts from Oviedo to Leon once a week," from thence to Madrid, carries but "nine passengers when full." And it hardly pays its expenses. This "coach" is kept on by a peasant living at Oviedo, named Rosendo Ruy; it is open to winds, snow, and rain; in fact, it is a species of sheep-pen mounted on four wheels, and takes two days and a half in the journey. I need, for elucidation of a small portion only of your readers, I presume, observe, that the whole distance from Aviles to Madrid is travelled easily in two days by the favourite conveyances of *El Señor Don Gil Blas de Santillana*.

In the third place, on the productions of the Asturias and Castile, through which the projected line is to pass—and here your correspondent is in two deficient. "But, perhaps (he asserts, when speaking of Asturian iron), as although much has been talked about it, no one at present has seen it." I would not, in reply to this statement, bring forward my own knowledge on the subject, but rather place against it the words of indisputable and allowed authorities; this, however, would of itself engross the full limits of a letter, and, by your indulgence, I will advert to the iron and coal in Asturias at another opportunity, contenting myself at the present, by stating that the coal of Asturias is proved to be equal to our Newcastle and Sunderland coals; and the ironstone is of the best quality; both of which are most abundant. You shall have, however, statistics on both. Of the coal, I will add, that there are now working the collieries of the late M. Aguado, Messrs. Chauveteau and Co., Lesorgues and Co., the Union Asturiana, Messrs. Partington and Green, together with those of the Asturian Mining Company. Of the iron, it may be seen at the Royal Artillery manufactory of Trubia and at Oviedo.

We are told, Sir, by your correspondent, that the immense plains of Castile produce "solely corn!" and, that the inhabitants have "such a quantity of straw that they are obliged to use it as fuel." If corn were the sole produce, and if, from its abundance, the straw be burnt, is it not of itself a fair argument, that a railroad is required to convey the surplus produce to countries where it is needed: and would not this, Sir, be a source of considerable revenue to a railroad?

The population, we are told, is "clad in wretched rags." At page 1053, vol. ii., *MacGregor's Statistics*, we find the following:—"With regard to religious or moral conduct, including all classes, I am convinced that a great balance is in favour of the Spaniards, compared with the French, or even the Belgians, who are a religious people. With respect to the back and belly condition of the lower classes in this part of Spain, (speaking of northern provinces) they have nothing to complain of. The interior of a house, or cottage, has no superfluous articles of furniture—but this is their fashion, and not their want. They have comfortable clothing on Sundays and feast days, and good clean linen on their beds. They have red and chubby offspring—the women breed like rabbits. I never saw so many children before. I have daily stopped to refresh in the small inns of villages, and in every instance had good table cloths and napkins, with changes of silver spoons and forks. In short, I have found comfort, cleanliness, and plenty, in every village; frank, cheerful, good-natured manners; kind answers to my inquiries, and, when I lost my way amongst the mountains, the labourer would, unasked, quit his work and lead me in the right way, refusing compensation."

This, Sir, is my answer to the "Idler in the Asturias;" and now I will put my additions, that your readers may learn some of the actual and bona fide prospects held out by a railroad from Aviles to Madrid. There are at present four great trunk lines proposed: first, the Royal North of Spain Railway, from Aviles to Madrid; second, the Madrid and Alicante; third, the Madrid and Cadiz; fourth, the Bayonne and Palencia Railways. Each of these schemes hold out considerable advantages. For the first, second, and third, royal ordinances have been granted. It will be as well to confine myself to the first of these, as coming more immediately under our notice, from the remarks made on it by your correspondent, "The Idler."

This company, we believe, will shortly bring its scheme before the public, and will doubtless satisfy its minutest criticism on the feasibility and prospects of the undertaking. The railroad is intended to pass through the coal and iron district of the Asturias, and the corn, wool, and flour districts of Leon and Castile, to the capital. And through, or near, the important towns of Oviedo, Leon, Valencia, Valladolid, Medina de Rioseco, Segovia, Avila, Guadalajara, Toledo, and Madrid. The importance of such a line is evident, as connecting the capital of the kingdom with the shores of the Atlantic. The engineering difficulties which the line presents are few, being those only of the Puertos de Asturias, and the Guadarrama mountains, whilst the vast plain of Leon is almost a level, and offers the greatest facility for rapid operations.

The population of the provinces through which this line will pass is the kingdom of New Castile, (take Madrid only) 297,812; Old Castile, 1,050,763; Leon, 1,201,228; Principality of Asturias, 464,565;—total (in 1827), 3,014,368. From this population, it is only fair to presume that a considerable revenue would be derivable from passengers. But, in my opinion, the railroad would find its chief income derivable from corn, flour, wheat, cattle, fish, iron, coal, wine, and fruit.

In all Leon and Castile, little coal is consumed, because of the expense of carriage from the coal fields of Asturias and the Ebro. Coal can be sold at the pit's mouth in the former fields for about 4s. per ton, and would supply all the road from Mieres to Madrid at half its present cost. In addition to the carriage of this item toward the capital, must be placed its carriage from the collieries to the coast, where it could be successfully exported for the supply of France, and the seaport towns in the Bay of Biscay.—The next article is iron. The cost of bar iron in Madrid is 22l. to 23l. per ton, whilst it can be manufactured in the Asturias at about 6l. or 7l. per ton. In fact, the only iron manufactured south of Asturias, is that of Andalusia, except pig iron, made at the Catalan forges; and the Andalusian forges are now supplied by English coals.

Flour, wheat, and corn, would form the next important item. I am almost afraid to speculate any figure on this head, but, certainly, the railroad will take up the larger portion of the enormous exports in these provisions to the Spanish Colonies, which are supplied at 50 per cent. above the cost price at Castile and Leon, on account of the carriage from these provinces to Santander where the shipments at present are made. Neither do I attempt to calculate the amount of traffic the railway would carry, imported on it from Cuba and the Havannah; but, by your leave, I will give a statistical account in my next communication.

I will pass over in this letter the articles of wine, fish, &c., but it is certain that the exports and imports of these commodities would greatly increase, by the connexion of the R. N. of Spain Railway with the Madrid and Alicante and the Madrid and Cadiz lines—there would result, in the first instance, a direct communication from the Atlantic to the Mediterranean, whilst the Cadiz line would be a powerful auxiliary to the traffic of the Royal North of Spain Railway, in fruits and wines. The passage from Great Britain to Aviles, might be accomplished in two days, and thus, by the great trunk lines above mentioned, we should be a distance only of four or five days from the Mediterranean.

For my own part, Sir, I am convinced that the proprietors of these railroads will meet with large returns; whilst these undertakings will be the channels for diverting the people of Spain from their civil commotion to commercial and spirited enterprises, by which they will regain that stand among the nations of Europe, which their country's position and international wealth justly demand.

C. L. W.

London, March 6, 1845.

PLAN FOR CHEAPENING THE SUPPLY OF GAS TO THE METROPOLIS AND OTHER PRINCIPAL CITIES AND TOWNS.

SIR,—I send you the following particulars of an original scheme, which I offered in the year 1839 to the British and Foreign Invention Company. I must beg you to bear in mind, that the cost of coal at the collieries (at the pit's mouth) is only about one-tenth of what it is in London.

Millman-street, Bedford-row, March 13.

JOHN BLOFIELD.

A Scheme for Supplying London (and all other towns situate on, or by, the principal railway lines) with Gas, at a much cheaper rate than at present.

EXPLANATION.

In giving an explanation, I shall not enter too much into detail, but content myself with giving a sketch of my plan, and enumerating a few only of its advantages. As I can better explain myself by giving it a name, I shall call it the "National Railway Gas Company."

In the first place, I propose that extensive gas works be erected, either near Birmingham, upon the Staffordshire coal-field, or somewhere upon the Derbyshire, Nottinghamshire, Lancashire, Yorkshire, Newcastle (the best locality), or Bristol coal-fields. The gas to be manufactured in the country upon the spot, and conveyed through pipes, laid along the rail-

ways, to a large reservoir in the neighbourhood of London, from whence it might either be sold wholesale to the present gas companies, or the "National Railway Gas Company" might supply it themselves to the retail consumer. In either case, an enormous profit is to be made, as the "National Railway Gas Company" would manufacture all the gas burnt in London, as well as in the provincial towns near the line of railways.

By making the gas in the country, in the neighbourhood of the pit's mouth, instead of in London, it would save the following expenses, among several others:—

It would save the expense now paid for having the coal conveyed such a distance.

It would save all those other numerous intermediate expenses incurred between its purchase at the pit's mouth and its delivery in London—amounting to upwards of 60 per cent.

It would save the enormous expense of the eighteen separate gas manufactories at present in the metropolis, with all their numerous establishments, independent of those in the country on the lines of railway.

Thus, my plan would not only save all these expenses, but innumerable others—the one manufactory of the "National Railway Gas Company" alone supplying the place of all!

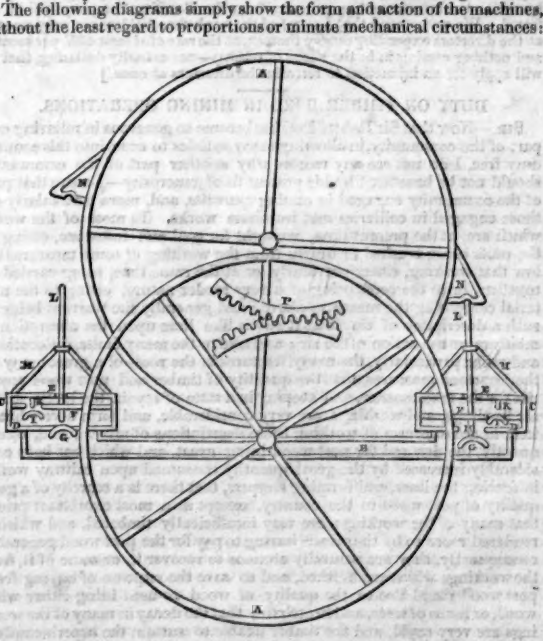
To show the importance of the gas trade of London, and that the cost of piping from that city to the coal districts would be comparatively a small expense, I give the following particulars.

There are eighteen public gas works, conducted by twelve companies—their capital amounts to upwards of 2,800,000l., employed in pipes, tanks, &c.; the revenue derivable therefrom is estimated at 450,000l. per annum. There are about 180,000 tons of coals used annually; there are 1,460,000,000 cubic feet of gas made; 134,300 private lights; 30,400 public lights; 176 gasometers—several of them double, and capable of storing 5,500,000 ft.

THE LAWS OF MOTION—NEW INVENTION.—No. VII.

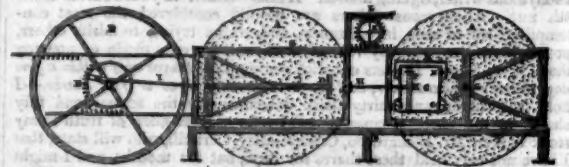
SIR,—Having partially explained, through the columns of *The Mining Journal*, that I had invented, and brought within the control of constructive agency, the principle of self-accumulating power—thereby identifying myself with the invention, which was my principal object—I am now desirous that a succinct condensation of the several articles you have already published, together with other additional explanations, may appear in your Journal, to the end that my ideas may be set fully and comprehensively before your readers at one view.

In taking up my former position, by assuming that there are many distinct motions which are applicable to the purposes of propelling machinery, I shall now endeavour to give the most prominent of those motions their proper places, in order that their nature and actions may be clearly understood. I intend to show that, as a motion of a certain definite character may be made to revolve itself into another motion of a distinctly different character—that, by continued transformations, or transitions, of motion, quantity may be increased with such facility, as to conclusively demonstrate that the means lay within the scope of ordinary mechanism, to make the force from a thimbleful of gunpowder drive from its foundation the heaviest structure in the world. This subject, which I once trembled to approach, I now feel disposed to advance boldly upon. I feel that I am sustained in my position by Nature's laws, and I feel that the day is at hand when I shall be fully sustained by the opinions of mankind in general. With your permission, Sir, in my notice of motions, I shall pass muscular motion as a subject too deep for my handling, and begin with expansion from heat. The piston of a steam-engine well describes expansive motion, and the bursting of the boiler partially shows what convulsive motion is; a steam-engine is employed in running up a weight, by which means expansive motion is made to resolve itself into force from gravitation—a force of all others the most obedient to restraint; it may be suspended and started into life at will—but, if you cut the cord that holds it up, it instantly assumes a threefold motion—viz., motion from gravitation, motion from projection, and motion from inertia; and again, in its contact with the ground, this compound motion resolves itself into percussive motion. It is through the medium of motion from inertia that I reach the means of multiplying power. This motion is arbitrary, because it will not be held in dalliance, or restricted to specific motion, it being the independent straightforward motion of a single body. The following similitudes will serve to show how power may be multiplied by transitions of motion:—Two heavy cast-iron blocks are suspended side by side; a hard steel wedge is placed between them, either side of the wedge touching each block; the head of the wedge receives a stroke from a hammer, and the force from the hammer is as often multiplied by the inertia of each block as the wedge hits the blocks harder than the hammer hits the wedge. The secret, as I understand it, lays here:—When a powerful concussion intervenes between two elastic bodies that lay closely together, each body is first forced upon itself, and then, recoiling the one upon the other, their elastic energies, so far as the intervening force taxes them, are thrown into a single effort to retract. This figure better describes the transitions of motion than any other that I can draw. The descending hammer is the compound force of projection, gravitation, and inertia, terminating on the head of the wedge—in percussive force effecting a concussion upon the blocks, which induces force from disturbed elasticity, and projection terminating in force from inertia. A flat cast-iron basin, ten inches in diameter, is placed on the ground. The top is covered with strong leather, clamped tightly to the rim; the interior of the basin communicates with an upright tube, one foot high, and one inch in diameter; a flat cast-iron block, of 40 lbs. weight, is laid on and over the leather cover; water is poured down the tube until the basin is full, and the tube full to repletion. The block of iron over the top of the basin is exactly poised by hydraulic pressure, so that the least action at the head of the tube will make it vibrate. The water at the top of the tube is hit by a wooden mallet of a half-pound weight, when the block is driven further than a direct blow from a 30 lb. mallet will drive it. The next figure will show how I avail myself of the benefit of convulsive force from expansion, as applied to the machines that the annexed cuts represent. Two heavy vessels in still water are placed end to end; either end presents to the other a flat even surface, ten feet in diameter, which, encircled by a rim, tends to prevent lateral escape; 1 oz. of gunpowder, deposited in a cavity formed for the purpose, is ignited between them, when the two opposing surfaces are suddenly pervaded by a thin sheet of highly compressed fluid, which starts the vessels instantly into motion, and before they are a straw's breadth asunder, they have acquired sufficient momentum to drive them off with great force. The following diagrams simply show the form and action of the machines, without the least regard to proportions or minute mechanical circumstances:



The first diagram directs you to look down upon two horizontal balance wheels, and upon the upper edges of the lower halves of two steam cylinders, cut through the middle and laid horizontally, and also upon the upper

edges of the bottom half of a divided steam-box, extending across one of the balance wheels, and attaches at either end to either cylinder, all of which are bolted to the one balance wheel marked A. A are the wheels; B, the steam-box; C, the edges of the cylinders; D, the bottoms; E, the heads which are perforated to allow an escapement of steam; F, the piston; G, the supply valves opening through the bottom of the cylinder into the steam-box; H, the dogs on the bottoms of the pistons, which open the supply valves; I, the escape valves through the pistons; K, dogs on the cylinder heads for opening the escape valves; L, piston rods; M, guides for them; N, combs on the opposite balance wheel, against which the piston rods act; P, two segments, one bolted to each balance wheel, which unite their forces. This cut shows you on your right that the wheels have been turned inwards, carrying the comb (N) and the piston rod (L) together, so as to have driven the piston home, which has forced open the supply valve. Steam being admitted, the piston will move forward—the supply



valve will close. The expansive force of the steam will carry the piston still forward, until the escape valve and the dog on the cylinder head come in contact, when the escape valve is opened, as the cut shows you, on your left. The cylinders must be of great diameter, and very short, to the end that a small quantity of high steam will give a powerful impulse to the balance wheels, which must be of great weight.

In the second, the dotted surfaces within the two right-hand circles, marked A, are solid sections of cylinders, which, in connection with their framework or bodies, I call cars, which move to and from one another upon a perfect plane; the left-hand circle, marked B, is a fly-wheel; G is a part of the framework or bodies of the cars; F is a side view of the fixed framework upon which the car bodies slide; C is a steam-engine cylinder, cut vertically through the middle, and laying horizontally, which is fixed to the right-hand car body; M, the steam-box; N, the supply valves, with their shanks protruding through the steam-box; H, the piston, the end of the rod of which is fixed to the left-hand car body; O, the escape valves, their shanks playing through braces bolted to the cylinder; L, the racks of either car; K, the pinion which unites them; D, combined racks and lever, which work upon a bearing on the end of the left-hand car body, and extend across the fly-wheel; E, the pinion, which works between the racks, and should be of the same radius as that which the crank describes, but is shown larger for the sake of conspicuity; I, the connection rod, with a slot on the end, which permits it to play back and forward on the crank. The cut represents the cars near their extreme points of separation, the pinion on the fly-wheel free from the racks, and the crank of the fly-wheel in the act of taking up the momentum of the cars from the connection rods. When the crank shall have reached its centre, the clogs on the pinion will have passed round, so as to admit a connection with the cogs of the lower rack, when the racks are tripped upwards, uniting the motion of the fly-wheel with that of the cars, which unity continues until the crank is a little past the half centre, when the connection rod overtakes the crank, and casts the momentum of the cars again upon it, at which point the cogs of the pinion have passed round, so as to free it from the rack, which will fall when the crank gets to the centre, and again unite the motions of the cars and the fly-wheel.

The main feature of this invention in its higher ranges is the act of separating, by powerful intervening impulse, two elastic bodies, whether floating in fluid pendant from suspenders, rolling on plains, or turning on pivots, and the following figures are two of the many methods that may be met with in its lower ranges. An elastic oblong block projects from a wall, against the end of which lays a suspended weight; an intervening concussion compels the fixed block to exert its elastic force in repelling the weight. A small steam-engine is employed one minute making 100 revolutions; in winding up a weight, the same engine is employed one minute in separating two heavy vessels, making two revolutions. The force from the inertia of the vessels is greater than the force from the gravitation of the weight.—March 12.

LEWIS KNAPP.

ON STEAM-BOILER EXPLOSIONS.

SIR,—Having had some experience in the operations of steam, like most other men in that way I have drawn my own conclusions therefrom, and, such as they are, I proffer them for the use of your columns. The little knowledge that I have of the subject has been drawn from experiments, through which my attention was directed to the astounding fact, that at least one-fourth part of the power of a low-pressure engine was exhausted upon the pump, which formed the vacuum, under the most favourable circumstances in which I could place it. Here was a phenomenon that could not be passed unnoticed. The presence of an incompressible fluid was certain, and that it was introduced into the boiler with the calorific was equally certain, and that it combined with vapour, and partially withholds it from condensation, is at least probable. What, then, is this fluid?—Is it the grosser one of two constituent principles of electricity, which delights in highly rarefied vapour? That it is the approximation of two fluids, which produce an electric shock, cannot be doubted. Its agitated appearance in the clouds show it, there being no law known which will justify the assumption, that a simple fluid could agitate itself, and ultimately expand in terrific concussion. The galvanic battery shows the presence of two fluids—the copper superinducing the one, and the zinc the other, which explode by contact—and might not the recoil be what is thought the restoration of equilibrium, for the fluid has no gravity that action could not obtain, seeing that disturbed equilibrium is but oblique force from gravitation? and might not the difference in quantity and quality account, in some way, for the positive and negative actions? If, then, it be a principle of electricity within the boiler, introduced there by the calorific, might not a boiler already surcharged with the one fluid, by a proximity with certain conductors, absorb so much of the other as to explode by an agitation of the steam, like unto an agitated cloud? and on some occasions, in sultry weather, might not a current be drawn into the boiler by the attraction of affinity, sufficiently large to instantly occasion one of those awful explosions that we sometimes hear of? Most of the explosions in America have happened when steam was moving from the boiler, either to the cylinder or from the safety valve, and not unfrequently on the instant of injecting cold water.—London, March 14.

ON STEAM-BOILER EXPLOSIONS.

SIR,—In *The Mining Journal* of 15th of February, you inserted some observations on boiler explosions, by a correspondent, who proposes to prevent, or mitigate, those accidents, by inserting in the roof of boilers a weak part, so that when a boiler is over pressed from any cause, this weak part would give way, and prevent a total explosion of the boiler. This is a good idea, but I differ from him with regard to the part of the boiler in which he proposes to place the weak part. His reasons for placing it in the roof would be good if the materials of which boilers are composed did not deteriorate in strength, or, if the deterioration was greatest in the plates composing the roof—for then he would be certain that the part of the boiler which was originally made weak would be deteriorated in proportion to the deterioration of the other parts of the boiler, and, consequently, that it would continue to be the weakest part. But, as we are well aware that the furnace and fire plates of boilers are subject to the greatest amount of deteriorating causes, it is evident, that the part of a boiler in the roof, originally made weak, may, after a lapse of time, be stronger than the fire or furnace plates, owing to those plates being subject to deteriorating influences, from which the weak part in the roof would be completely exempt. For this reason, I think the weak part or parts ought to be placed in the fire or furnace plates of boilers. When explosions take place, boilers are moved out of their original position only when extensive ruptures are made in them. The bursting of a small weak part or parts in the fire or furnace surface would not displace a boiler.

I perceive your indefatigable and able correspondent, Dr. Murray, agrees with your anonymous correspondent on this subject; for, in his letter of 23rd February, he writes, "The bursting of a pipe, or even pipes, in the body of the cylindrical part of the locomotive engine is a bagatelle." What is a burst tube, but a small weak part of a boiler? Although the bursting of a tube does little damage, yet it is most undoubtedly an explosion of a locomotive. For, what would be the condition of the other parts of the boiler, if the tube had not given way? The roof of the fur-

nance of the *Irk* engine answers this question; and the evidence adduced at the inquest, throws considerable light on the subject; it was there made known, that the *Irk* engine had been furnished with a new set of tubes four days previous to the explosion, and that the said tubes were stronger than usual. There is no necessity for attempting to make out that the copper of the furnace had become defective. The introduction of the new tubes of extra strength, was the grand secret of the giving way of the furnace; the original tubes were weaker than the furnace, the new tubes were stronger than the furnace.

If any of your correspondents could furnish you with correct information, as to how many of the former tubes had burst in the *Irk* engine at various times, he would, in reality, be furnishing you with practical experience and evidence of the successful working of the plan of constructing boilers, so that when they are over pressed, a small weak portion shall give way and save the rest of the boiler. With reference to the melancholy accident at Messrs. Samuda's works, in your last Number, of the 8th inst., you state a most curious fact, with regard to the respective conditions of the top and second row of tubes after the explosion. I think some valuable practical conclusions might be drawn from that explosion, if the following particulars could be obtained: The number of rows of tubes; the number of tubes in each row; the diameter of the tubes; the width of water space between the tubes; the width of water space between the tubes and the sides of the boiler; also the width of the water space between the tubes and the roof of the furnaces if they are below the tubes.

Willow Park, Greenock, March 10.

JAMES JOHNSTON.

EXPLOSIONS IN STEAM-BOILERS—PROPOSED SYSTEM FOR WORKING COAL.

SIR.—It is not likely I should have recorded any condemnatory sentence against safety-valves in steam-boilers, as commonly constructed, or the ruinous and destructive mode of working coal, had not substitutes for both seriously engaged my attention.

The recent disastrous explosion, being the second, connected with that highly respectable and eminent firm, Messrs. Samuda, has painfully impressed my mind with the absolute necessity of an entirely new construction of the safety-valve for the steam-boiler. There is something connected with the occasional "gaging" of the so-called "safety-valve" which we do not well understand, and which may render it a nullity in the hour of peril. I have already recorded my opinion, that materials yielding sudden bursts of flame, as wood, bituminous coal, &c., should as fuel, be entirely excluded, and only that fuel be employed which yields an equally diffused and continuous temperature, as charcoal, coke, or anthracite. Allow me now to propose new conditions of safety, as a substitute for the "safety-valve," as it is called. The following figure will help to explain my method of relieving sudden outbursts and "undue pressure" of steam:—

It will be seen, by the figure [Fig. 1], that I substitute for the "safety-

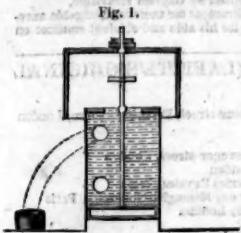


Fig. 1.

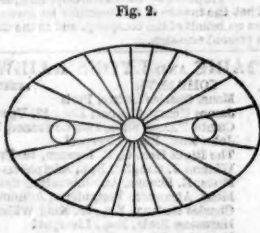


Fig. 2.

valve" a piston, moving in a cylinder, flanges securing the piston from being forced into the boiler, or thrown out of the cylinder. Two orifices permit the excess of steam to escape laterally, and not above, as in the common "safety-valve." The spindle is weighted, either above the framework, or below the cross bar, as may be found most convenient. The framework above is intended to preserve the vertical position of the piston rod, and secure its uniform action. "The body of the piston may be metallic, but the casing used to render it steam-tight should be formed of some elastic matter. India rubber is materially acted on by heat, and, therefore, I apprehend that the propriety of its employment for this purpose would be questionable, and the contact of the metallic piston with the metallic cylinder might from voltaic or other agency render its free action equivocal. I recommend coir, or the fibre of the coco-nut, as being both elastic and cohesive. The lower orifice in the side of the cylinder will suffice in ordinary cases, but there is a double provision in the highest orifice for an extraordinary emergency, and I have supplied here a pipe connected with a small fixed vessel, insulated, by resting on a non-conductor of caloric, and containing water, the pipe dipping into it. It is clear that, on any sudden emergency, and dangerous evolution of steam, this water would instantly rush in and condense the steam. "That this arrangement is infinitely preferable to the common "safety-valve" I cannot doubt, because it is free from those contingencies which puzzle our investigations, and perplex our scrutinies.

Of course, you must have reasonably inferred, that I am utterly hostile to the present barbarous method of working coal mines. An entire immunity from "fire damp" and "choke damp," in "pillar working," seems to me impossible, though "more shafts and more air" will remedy the evil as far as it can be remedied. The axe must be laid to the root of the evil—a new system of working is the only Catholicism, for perfect ventilation is out of the question, under present circumstances. I believe that a current of water flowing in a drain tile, of course open above, close to the wall of coal in the air passages, would be of great importance, and tend, as I have already stated, to the relief of the miner and purification of the atmosphere, and I cannot too much insist on the absolute necessity of a ventilating furnace at the top of the upcast shaft, as well as that at the bottom. I have already explained the reason of this necessity.

After long and anxious thought, and having revolved in my mind many plans, sufficiently various, nothing has appeared to me to combine the essential conditions necessary for the problem, as working a coal seam on the principle of the ellipse, the two foci of the ellipse being downcast shafts, and the centre between being the upcast shaft, supplied with ventilating furnaces, as in the figure [Fig. 2]—the radii representing the walls of coal, temporarily left, and the spaces between, the coal which has been removed. Here the coal-field is exhibited as insulated by the circumference of the ellipsis, and a momentary glance will show how completely ventilation may be regulated in reference to any branch of the workings, by brattices, or trap doors, round the limited circle of the upcast and ventilating shaft. I would willingly now abandon all further thought on these painful subjects. I own I have no hope of either Government or the Legislature interfering, until compelled by the public voice—now, a "lion couchant," and requiring the wholesale destruction of a few hundred more lives to rouse that public from its dormitory.—March 10.

J. MURRAY.

PROPELLERS.

SIR.—If you should think the following outline of the history of the Archimedian Screw, as it is generally understood in America, worthy a place in your paper, it is at your disposal. Some four or five years since, this propeller was brought before the American public by the able lectures of the celebrated Dr. Lardner, as the invention of a Capt. Ericsson, under the name of the Ericsson Screw. The Doctor maintained that it was the last stretch of human imagination in the department of propellers, as it was in imitation of the tail of a fish, but forgot to mention, at the same time, that the fish who had the honour of carrying this famous propeller had a neck of using it—that Capt. Ericsson would not be likely to attempt to imitate. Subsequently, another person, whose name I have forgotten, claimed to have patented it some twelve years ago, and the right in the fish's tail became a subject of newspaper debate, but, as the Captain's paragraphs were much longer and thicker than those of his opponent, he still has the honour of that appendage. For its uses, Captain Ericsson, about four years ago, effected an experiment of his propeller on one of the New York packets, which was considered by the owners as a failure. But it having fallen under the notice of Captain Stockton, of the United States navy, and Robert L. Stevens, of New York, both gentlemen of known scientific attainments (who thought, no doubt, that it had merits in its adaptation to vessels of war and canal boats) it resulted in its being applied by Mr. Stevens on several canal boats, and by the United States Government, through Capt. Stockton, on a vessel of war called the *Princeton*, on a revenue cutter called the *Legare*, and several coasting vessels, which may be seen from the New York harbour moving at a rate not exceeding six miles an hour. The *Princeton* and *Legare* were furnished with boilers which, if occasion required, would bear with safety 300 lbs. of steam to the inch, with engines called by those who best know their uses high-pressure condensing-engines, which, when extraordinary preparations were

made for the purpose, would work for a few hours to twice their rated power. The *Princeton* and *Legare* both had a trial of speed with the *Great Western*—and beat her, of course, as the commander of the *Great Western* was not permitted to increase the steam on his engine beyond the ordinary rate. None but those who are apprised of the circumstance of Captain Stockton's having compromised his reputation as a naval engineer, with the success of the experiment, would know how to excuse a post captain for showing his vessel off in that way. It appears to me that this invention carries strong evidence of its impracticability in its own front, for everybody knows that the angle of action which the flukes, or buckets, of a propeller present to the straightforward motion of the vessel, is the angle of propulsion, and I think that whosoever will take the trouble to compare the action of the paddle-wheel with that of the Archimedian screw will be forced upon the conclusion, that a 60-horse power engine with the paddle-wheel is quite as efficient as a 100-horse power engine is with the Archimedian screw.—New York, Feb. 5.

COLUMBI.

MINING OPERATIONS IN SPAIN AND PORTUGAL.

The attention of English capitalists has of late been directed to Spain and Portugal, as affording means for the profitable employment of capital in working mines in those countries; the proved richness of the mineral deposits of the former holding out more than ordinary inducements for the realization of large and remunerative returns—while discoveries made in the latter, and records of old workings, have had their influence in leading parties to embark in the development of its mineral resources. In addition to the capital thus devoted to mining pursuits, railway speculation appears to have taken root in Spain; and in our present Number we have offered some remarks as regards the latter undertaking. In adverting to the several projects, we must necessarily be brief in our notices, and confine ourselves, on the present occasion, to one or two of those to which public attention has been directed, through the medium of the prospectuses or reports which have been issued.

ANDALUSIAN MINING ASSOCIATION.—This company, as its title indicates, is formed for working mines in Andalusia. One of the early mines possessed by the company, and which is now actively at work, is in the neighbourhood of Seville, the ore yielding 75 per cent. for lead, with a small admixture of silver; it appears, however, that mines in the district—not, however, in the possession of the company at the present moment—although it is understood that the directors are in treaty for several tracts of mining ground of acknowledged richness, yield, on careful assay, 45 per cent. to 47½ per cent. for lead, and as much as from 740 ounces to 11,248 ounces of silver to the ton of ore. Several mines have been secured by the company, of which four are of lead, and eight producing copper ores, in all of which certain preliminary workings have been done previous to the possession on the part of the company, who are causing smelting-works to be erected, and which it is expected will be shortly completed, so as to enable them to smelt the produce of the mines. The appearances at surface are described by Mr. Frederick Burr, the chief superintendent (a gentleman well known to our readers as a correspondent, and of undoubted ability), as evidencing unusual indications of mineral wealth, and thus justifying an outlay in prosecuting the workings in depth. One of the mines, which produces copper of good quality, the size of the lode being ten to twelve feet, is intersected by a cauter lode, carrying lead rich in produce for silver; another of the mines is described as producing ore of 20 to 25 per cent. produce. It is needless to follow the report which has been submitted to us, as to the value or prospects which the several mines present, the quality of the copper ore being generally rich, and the lead yielding a high produce for silver. It is supposed that an outlay of 15,000l. to 20,000l. will accomplish the working of the principal mines secured by the company, and that productive results may be contemplated within the space of two years. The dues payable are 5 per cent., or one-twentieth on the ores raised; and, from the nature of the country, the mines may be worked to a considerable extent by means of adits, thus precluding the necessity of employing extensive machinery. The smelting and refining works, on the banks of the Guadalquivir, are, as we have already stated, on the eve of completion, and which, it may be observed, are not dependent for supply on the mines possessed by the company, and an eminent assayer and practical metallurgist has been lately appointed, and of whose arrival at the mines advices have been lately received. It is difficult in mining enterprises to form any calculation of prospective profits; but with reference to the smelting, or manipulating department, it is calculated that a net revenue of 10,000l. may be realised on the smelting and refining of argenteous lead ore alone. We do not propose following the report as to the estimate of profits which may be realised from the mines themselves, this must depend on so many chances to which all mining enterprise is subject; but, judging from the produce and quality of the ores, and the confidence with which the chief superintendent of the mines expresses his opinions, the adventure has every appearance of promise and successful results.

MINES IN THE ASTURIAS.—The company formed for working the Asturian mines are prosecuting their operations with considerable energy, and the formation of the Royal North of Spain Railway, through the mineral districts possessed by the company, to which we have adverted in another place, is calculated to be of infinite advantage, from the facility afforded of transit of the ores, and the economy consequent thereon. The works to which the main importance may be attached are those for the smelting of iron at Mieres, which we learn will be completed within six months from the present time in accordance with a contract entered into with Messrs. Graham and Co. for their construction, while active operations are stated to be pursued advantageously at the colliery. The coal basin is reported by Mr. Schultz, Director-General of Mines in Spain, as having more than sixty distinct seams; the quality, so far as we have had the opportunity of observing, being well calculated for the manufacture of iron. The large profits contemplated from these arise in a great measure from the duty imposed by the Spanish Government on all iron imported, whether manufactured or otherwise, while from the advance which has lately taken place in the price of iron in this country, the estimate as to profits, if correct, may be very fairly increased so as to yield a return, which, but for the authenticity, to be attached to the figures adduced might otherwise appear greatly exaggerated. We are not in possession of any late information as relates to the San Estevan lead mine, which was considered of high promise; nor are we aware whether any ores have been shipped to this country, which was intended. The mines of copper also appear not to have been worked extensively, or with that productiveness of which they held out fair expectation; but this may, in a great degree, be attributed to the main force employed by the company having their attention directed to the iron works and collieries, as also to the cinnabar, or quicksilver mine, called Los Reyes, or La Eugenia. Of the latter we learn that the lode is from three to four feet big, and so far as it has been proved, preserves a regular appearance; the ore is found to be generally disseminated through the rock or matrix, which is described as being of a semi-basaltic and porphyritic nature, with realgar and iron pyrites. About ten tons of ore have been broken, and judging from the size of the lode, and the specific gravity of the ore, it is estimated that a fathom of ground will turn out upwards of seven tons of lode; and, from the nature of the ground, it is calculated that in one level or gallery fifty tons or thereabouts can be broken, per month, which is assumed to yield 2 per cent. of cinnabar, being equal to one ton—or when reduced, about 1800 lbs. of mercury. Should their expectation be realised, this mine alone holds out good promise; but we think it is hard to form an opinion until the actual results of the pass workings by the reduction of the metal be first ascertained.

Having adverted to mining operations in Spain, and the advances making in that country, from the employment of English capital in a great measure, we now approach the mines of Portugal, and a few brief notes with which we have been favoured will be found to possess interest, although we regret that the information afforded is not more general, and, at the same time, more minute. However, the present article may be considered only the first of a series.

MINES IN PORTUGAL.—Tras os Montes.—A tin lode has within the last three months been discovered within a league of the river Douro, which is navigable down to Oporto. The lode is represented as being three feet big, and of rich quality, but the produce is not given in the notes before us: the ore broken from the lode was within five fathoms of the surface, and is represented rather as nodules disseminated through the gangue than a compact lode—the inclination is above 58 deg., and its direction north-east.—Copper mines.—One or more shafts are now in course of sinking in the Algarves, and stones of ore have been discovered, which are stated to be of rich produce; some English miners are here employed, who report favourably of the adventure. Another copper mine, which had been formerly worked with considerable advantage by the Marquis of Pombal—the duty paid to Government, of 5 per cent., being stated as upwards of 6500l. per annum—is also about being resumed. In the vicinity of Alcobaca, extensive machinery is in course of erection, with the object of washing the alluvial soil, which contains gold; and a mine is also in course of working in that district, on which 150 men are employed—the mode of washing the auriferous earths being by the batea and ordinary process observed in the Brazilian mines. Several mines of lead have been discovered in various parts of Portugal, some of which, we are given to understand, contain a large proportion of silver—several companies, in the different localities, having lately been formed, and more being in course of formation, with the view of proving the lodes.—Quicksilver.—A large establishment—at least, such as may be so termed for that country—has been erected, with a steam-engine of 20-horse power, and requisite machinery for washing and separating the ore, at Coyna, near Lisbon, by a French and Portuguese company. The object is the extraction of quicksilver, which is found in its native state, as also the reduction of cinnabar, the former is said to be in abundance, so as to leave no doubt of the works being carried on with advantage.

Many of these speculations are held in high estimation, which, however, is no proof of their value, as there is evidently a want of practical experience and knowledge, as affects the working of the mines, and the operations are represented to us as being of a contracted nature; there is, however, a wide field for the employment of capital, to those who may be disposed to embark, while the contiguity of the several sets of mining ground to ports of shipment, and the advantages possessed from an extensive field of anthracite being available, certainly hold out advantages. Iron ore is found in abundance, but nothing is done with it, although it might be rendered available with the anthracite.

M. SCHAFHAUTL'S METHOD OF PURIFYING CASTINGS APPLIED TO THE MOULDING IN SECOND FUSION.

[Abridged from the *Moniteur Industriel*.]

No metallurgist is ignorant of the process adopted by M. Schafhautl for refining sulphurous, phosphoric, and arseniferous castings: hitherto its success in Germany has been complete, and the method appears so simple and correct as to warrant the anticipation of the best results. The ingredients of his composition consist of 1½ lbs. of peroxide of manganese, 3½ lbs. of chloride of sodium, 10 ozs. of clay—the two last, of course, being the essential elements. The mixture being subjected to the temperature of a puddling oven, instead of volatilizing itself, decomposes; the sodium seizes the oxygen of the air or of the peroxide of manganese, and is transformed into soda, which unites with the silica and alumina of argine, and gives place to a silicate and aluminate of soda, which mix themselves with the scoria. The protoxide of manganese is converted afterwards into silicate, and thus diminishes the waste of iron; and the clots being at liberty seizes on the sulphur, phosphorus, and arsenic, to form volatile chlorures, which escape by the chimney. We see, therefore, that the process has the effect, not only of purifying the castings, but, probably, of materially shortening the labour; and it is a question, whether, by a slight modification, it might not be adapted to the purifying castings for moulding in second fusion. But, for this it will be necessary, in the first instance, to lessen the proportion of peroxide of manganese. In fact, the contact of the metals with oxygen is wholly unnecessary, decomposition of the castings not being intended, and as to the oxydation of the sodium, the current of air produced by the pipes is more than sufficient for that purpose. But, in applying the principle to the system in question, scoriae were generated to a great extent, and the clay used in M. Schafhautl's, unfortunately does not tend to diminish this difficulty, but rather creates others, waste, trouble, &c. But, then, how are we to produce decomposition in the marine salt? If we substitute hydro-chlorate of ammonia, we shall have, first, the advantage of its salt being richer in chlorine than marine salt; secondly, its requiring a far lower temperature to get volatilized; thirdly, the sal ammoniac being very easily decomposed by the iron; fourthly, the hydrochlorate of ammonia does not augment the scoriae; and, lastly, it contains from seven to eight per cent. of hydrogen, which would render the purification more complete; the only objection to this is the difference of price between the ammoniac and the marine salt. The question, then, is, would that objection be compensated by the undeniable advantages of the substitute. To purify the castings of sulphur, chlorine of sodium must be largely used; but this, and the difficulty of cooling, is overcome by the sal ammoniac, for the latter considerably raises the temperature of the furnace; and, if this be established, we know nothing to prevent iron-masters from purchasing hydrochlorate of ammonia at a low rate, and then applying the carbonising ovens, they would thus procure more sal ammoniac than they could possibly use. But, though this substitution may thus be beneficial in the cupolas, we doubt if it would be so in the reverberating furnaces, as in the latter the intimate contact of the sulphurous casting with the sulphurating matters, exists only for a stirring about, more or less prolonged; and this stirring, a *sine qua non* condition of a sufficient renewing surface, may, if great care be not taken, occasion great inconveniences; the casting exposed on a large surface to the action of the air, drawn by the flame, will partly refine itself, or, at least, whiten; this, however, may be obviated, we think, by the admixture of a small proportion of carbon, which will preserve, as much as possible, that which constitutes the casting; thus, then, we have freely given the various advantages and objections which are prominent in the application of M. Schafhautl's system to the purification of castings in second fusion, by the substitution of hydro-chlorate of ammonia; it remains to be proved whether its benefit will counteract the difficulties which present themselves. The suggestion, however, is at least valuable, and we shall anxiously watch its issue.

▲ A ROYAL MIXER.—(From a Correspondent).—Our readers will doubtless learn with interest the fact, that there is now employed at the Mount Savage Iron-Works, near Cumberland (U.S.), as a common workman, a son of one of the English Royal Dukes, if not of the late King!—who, after having served as a naval officer, and been in the employ of the Government as an engineer of public works, was, through some unfortunate occurrence, obliged to take refuge in America, some years since, under an assumed name: he has married a respectable lady of Allegheny, and has a large family. The accuracy of this statement is placed beyond doubt, by the individual having been recently recognised by a gentleman who was his classmate at Eton, where he is said to have been known as the young Count de la Zouch. What the circumstances may be which occasioned his proceeding to the United States incognito, we have not heard, but it is there believed to be some offence given to the Duke of Cumberland.

▲ ELECTRO-MAGNETISM A MOTIVE POWER.—Mr. Grove, in explaining the distinctions between his invention and M. Botto's observations on this subject, states that electro-magnetic engines may be ranged into three distinct classes. To the first pertain all those which work by the immediate action of the force of deviation, as exemplified in the galvanometer specified by Barlow. The second class comprises those which are constructed on the principle called that of suspension, and which consists in fixing at rest two powerful electric magnets before the periphery of a wheel, and also to place in the diameter lines of this wheel, and on its periphery, plates of soft iron, at equal distances near each other. The electric magnets are disposed in such a manner that they lose their power of attraction as soon as they have drawn to a certain distance one of the plates of iron, which the circular movement of the wheel renders necessary, but they immediately regain this power to act the instant after on the plate following. In this manner the wheel must constantly be moving on its axis. The third class of electro-magnetic preparations rests on the principle of revolving magnets, according to Ritchie's system. In these suggestions, an electric magnet, turning on a pin in a horizontal plane, is brought between the poles of an immovable magnet. By the aid of the alternative attraction of the opposite magnetic poles, joined to the great power which is peculiar to itself, the electric magnet maintains itself in a precipitate movement of rotation. With regard to the expense which would be requisite to occasion an electro-magnetic force, it follows, from the experience of Dr. Botto, that 44 lbs. of zinc produce an effect equal to a horse-power of twenty-four hours' duration. Now, taking zinc at the rate of 3d. per pound for metallic zinc, this power could be obtained for about 11s. About 50 lbs. of nitric acid would also be required to dissolve the metal, and produce the necessary results; and, reckoning the acid at 2½d. per lb., this quantity would cost about 10s. 6d. The total expense, therefore, to obtain a motive power equal to that of one horse, by the aid of an electric contrivance, would be about a guinea.

▲ IMPROVEMENTS ON THE ATMOSPHERIC RAILWAY.—Mr. James Beattie, of Montrose, has proposed a very ingenious continuous valve for the adaptation of atmospheric railways; and Mr. James Miller has also suggested a plan for superseding the valve altogether. The invention of the former gentleman consists in a semi-circular hollow being cast on the top of the exhaustion pipe; above the slit, a hollow pipe, or tube of leather, filled with oil or other substance, is laid in it, the oil keeping the tube always lubricated, and, on the approach of the railway train, the leather tube is lifted up by a pulley or roller attached to the first carriage, and, as the carriage moves onwards, the leather tube falls again into its semi-circular hollow, and covers the slit—the tube being lifted only to the extent of, perhaps, two or three feet at a time.—Mr. Miller's proposition is, in place of a valve, to have the exhaustion pipe cut longitudinally, so that it may be opened by pressure, and close tight of itself when the pressure is removed. Two wings are cast upon the tube, in such a way as to be acted on by the weight of the first carriage; the tube is thus opened, so as to allow the communication with the piston to pass through; and as the carriage moves on, and the pressure is removed, the tube closes of itself again, so as to be air-tight. He also proposes a conical pivot for locomotive carriage axles, knowing from experience that such a form is much stronger than those formed with an upright shoulder.

IRISH RAILWAYS.

[FROM A CORRESPONDENT.]

We have every reason to hope and believe that our humble efforts, in warning the public against the various stock jobbing projects that are constantly being thrown on the market, have had their effect. We know also, that many unsuspecting persons who would otherwise have been caught by a few high sounding names, placed at the top of a prospectus, full of fine promises, have been saved their money, in consequence of the exposures, which at various times we felt it to be our duty to make, of unprincipled schemes, brought forward solely to enrich the needy speculator, at the expense of the public. The calamitous year of 1825 must still be fresh in the recollection of many of our readers; the superabundant capital—the rage for investment—the extraordinary, and all but universal, infatuation of the public—the lavish squandering away of tens of millions, and the utter ruin to which multitudes were, in consequence, reduced, are matters of history that may well serve for our profit in the present times. To a considerable extent, the public have profited by the dear-bought lesson; money is, perhaps, as plentiful at the present time as the period to which we refer, but the rage for speculation is somewhat more tempered; and, although most people are far from being as prudent as they ought to be, it requires much greater skill and management, on the part of the bubble projectors, than formerly, to conduct and prosecute their schemes—schemes still coming before the public, that require the constant care of the press to watch and expose. The manner of proceeding is much the same now as what it was formerly; the projectors procure a few "good names"—that is, they persuade some two or three good-natured noblemen, or gentlemen of high standing, to permit their names to be placed at the head of a prospectus, as members of a "provisional committee," who never think more about the matter—under cover of their names, "John Smith, Esq.," "Charles Jones, Esq.," "Louis A. Mandeville, Esq.," &c. are introduced; it is not thought necessary to give an address with any name, as all the world must know the first named parties, and is also bound to suppose that the rest are highly respectable, or they would not be found in such goodly company. Now, "John Smith" is a most excellent name, but, inasmuch as there are upwards of one hundred John Smiths in the *London Directory*, it would be rather difficult to hit on the true "Simon Pure;" if, indeed, the projectors had any one of the *gens* especially in view, and thus many an industrious tradesman is induced to part with his hard-earned savings, and lose them in some stock-jobbing bubble, on the faith of some noble, or right honourable names, carelessly given, and pompously put forth as "projectors deeply interested in the success of the undertaking."

Our readers are aware, that in some late numbers of this Journal, we inserted a series of articles on the projected railways in Ireland. Of the majority, we expressed ourselves in strong terms of approbation; others, we considered doubtful, whilst some dozen projects we denounced as mere schemes, that parties were endeavouring to "get up," without the slightest prospect of their ever being *bona fide* undertakings; some were projected through a country, which, from its nature, was totally impracticable; others, where there was no traffic; some again, in opposition to lines already established, and others, to those which are about to be established; but, whatever might be the special circumstances of each, the projectors of all had one common object in view—to extract every shilling they could manage from John Bull's pocket, and to keep it when they had got it; a very good resolution, no doubt, but whether or not it can be successfully carried out remains yet to be seen. In pursuance of their plan, these speculators come over from Ireland, furnished with long lists of "projectors," "promoters," and "provisional committees;" with a number of high standing and noble names, together with a string of Irish "John Smiths," to represent the mercantile department; and, having spent about a hundred pounds in advertising, these gentlemen think they have nothing further to do than appoint the day of call, receive deposits, take a year and half to spend among themselves the overplus subscriptions, and the quota that falls to them respectively: the bill comes before Parliament, the bubble bursts, and the unfortunate shareholders get back what they can; not one of the high personages, whose names are put forward, in the first instance to catch them, ever take a share, their only object is "to do good to the country," utterly regardless of the ruin they entail on thousands, who invest their money on the good faith of such representations; we thought this sort of business was now to be reckoned amongst the things that were: in fact, that the trade was up. We remember some years since, a steam coach company was formed in Ireland, with a proposed capital of half a million: on the "provisional committee," were the names of some twenty-five Irish Peers and Members of Parliament, not one of whom, it is needless to say, had the slightest idea of taking a single share; the thing was seen through, and the affair quickly fell to the ground. As to the mere fact of taking shares, or not taking shares, in any railway or other project, by those who allow their names to be put forward as promoters, we think nothing—that is a matter of indifference, if they believe that it will be a *bona fide* paying concern, and that theirs is an honest intention of carrying out the object proposed.

The course of the above observations bring us to a matter somewhat personal to ourselves, which we shall briefly state: amongst the various schemes now afloat, which we described as being got up without the most remote prospect of their proposed object being carried, was one that rejoiced at the present time in the title of the "Dublin, Belfast and Coleraine Junction"—which, six weeks previous, called itself the "Armagh and Coleraine," with branches to Portadown, Londonderry (1) and Portrush, having only assumed that name in exchange for the Dublin, Londonderry, and Belfast (1) Junction, under which title it was registered in November, that name being a substitute, for the original title—"the Armagh, Tyrone and Londonderry!" this under four different titles—three of which have been assumed within the same number of months, has the attempt been made to foist this scheme on the British public. With regard to the line itself, we shall only say a few words; it was laid out in 1837 by a land surveyor, named Armstrong, it kept close along Lough Neagh, with branches to the different towns, avoiding entirely the most thickly populated parts of the country, and crossing the River Bann, where its width and depth would render a large outlay necessary. For a particular description of the line laid out by Mr. Armstrong, as delineated on the railway commissioners' map, we must refer our readers to a letter from a correspondent well acquainted with that part of the country.

We inserted last week a letter from a Mr. Barnes, who claims to be "the originator and first promoter of a line of railway from Armagh to Coleraine." This gentleman complains of our designating the "Dublin, Belfast, and Coleraine Junction Company" as a bubble—we shall not quarrel about terms, and many of our readers may, perhaps, be of opinion that a more fitting one might be applied. This "company," as we have already seen, has endeavoured to foist itself on the public within the last three months, under a variety of names, and by shifting the *dramatis personæ*, who figured under the appellation of the provisional committee. This fact alone would be quite sufficient to stamp the character of the undertaking, and had the "projectors" taken the hint we gave them a few weeks since, and quietly retired, it would have been unnecessary to say anything more on the subject, but as Mr. Barnes rushes into print, and demands to have the *bona fide* nature of his project investigated, it would be doing not only that gentleman, but the public, great injustice, if his demand were not complied with. Nor will the labour be lost, as some dozen projects we could refer to are more or less in the same predicament as the one under consideration. "Should it become necessary (quoth the candid Mr. Barnes) to enter into any defence against myself or the original promoters of the Dublin, Belfast, and Coleraine Junction, you shall find me at all times ready and willing"—to defend himself, we presume, against any charge that might be made against him, or those connected with him.—Very good. Now, perhaps, Mr. Barnes will inform us which of the concoctors of his project made the *avowedly* unauthorised entry of the names of a number of noblemen and gentlemen, in the registry of promoters under the late Joint-Stock Companies' Act, on the 22d of November last. A prospectus, with the names of these noblemen and gentlemen attached, all of whom indignantly denied that they had ever given such authority to any party, was issued "privately and confidentially," by the solicitors to the "company," to some influential parties along the projected line, *excepting those named in the prospectus*. The solicitors, it is to be presumed, only acted according to their instructions, but it seems very strange that their suspicions were not aroused by the manner in which they were instructed to issue a certain number of copies of the prospectus. Perhaps either these gentlemen, or Mr. Barnes, can throw some light on this transaction. When the affair came to be known in Ireland, through a copy of the prospectus falling accidentally into the Earl of Charlemont's hands, and his repudiation of all connexion with the parties appeared in the Irish papers, Mr. M'Padden, the "company's" solicitor, disowned the pro-

pectus. Will those who now figure in the same capacity do the same? We shall most willingly insert next week whatever they may have to say on the subject; hitherto they have kept a very discreet silence. This exposure in Ireland, involved the necessity of one change in the "company's" name out of the three which have been made; it then dissolved itself, and from the ashes of the old "company," rose not the present, but the one antecedent to the present, which only existed about six weeks—then came another change. We hope our readers are able to follow us through all these choppings and changings, and out came the prospectus of the "Dublin, Belfast, and Coleraine Junction," but without the names of the Marquis of Downshire, the Earl of Charlemont, Colonel Stewart, Mr. Boyd, M.P., and other names that flourished in the old prospectus—all swept away.

We have gone at considerable length into this subject, but not more than what is necessary, to show how this class of speculations are got up in Ireland, and we only do justice to the Irish press to say, that in general they denounce them as mere speculations, got up by sharp lawyers looking for practice, and not very particular how they get it. The "company" under consideration have got no less than six lawyers, three secretaries, two acting engineers (in a former prospectus, one of these was an architect, and the other a surveyor, but both are now engineers), and a "consulting" engineer—all waiting very patiently watching the result of the present speculation. Now, supposing, for argument's sake, that in a case of this sort five or six thousand pounds was paid in deposits, or even double that sum, our readers can themselves form an opinion as to the amount they would ever have a chance of receiving back. We see that Mr. Dawson, the chairman of the Board of Customs, is put down by Mr. Barnes as a "chairman" to his project; this is an unfortunate selection, and Mr. Dawson will no doubt be very much surprised should he ever hear of the honour conferred upon him, quite as much as the Marquis of Downshire and the Earl of Charlemont were under similar circumstances, as it unfortunately happens Mr. Dawson's official situation prevents his filling any office of the kind assigned him by Mr. Barnes.

We must now conclude.—We could go through the details of a dozen other Irish "companies," not a whit better than that of which we have given a sketch. We trust our remarks will not be misunderstood; they are intended only to apply to the bubble companies, of which we have had more than enough in England. In Ireland, there is as good a field for sound and honest speculation as with ourselves, or any other country in the world. Should Mr. Barnes, or others connected with the scheme, feel themselves in any way aggrieved by our remarks, our columns are freely open to their reply—in the meantime, we presume "The Dublin, Belfast and Coleraine Junction" will disappear in the same manner as its predecessors, to be re-modelled, re-organised, and re-provisional committed at no distant period, under a fifth form and designation.

[COPY BY LETTER REFERRED TO.]

"The line first laid out by Mr. Armstrong, in 1837, was from Armagh direct to the borders of Lough Neagh, and thence along the valley of the Bann to Coleraine—keeping in the low wet grounds, where it is not possible to make a railway at any reasonable expense—crossing at the mouths of the rivers, thereby unnecessarily increasing the size and cost of their bridges; it also crosses unnecessarily the Coal Island Navigation, at the expense of a very heavy bridge and embankment—passes at a distance of five miles from the principal towns—and does not touch at one of them between the termini except Kilrea, and crossed the Bann at a point one mile from Coleraine, where the expense could not be less than 30,000*l.*, besides passing through very valuable property. It was, therefore, as a line between the termini, the worst that could be selected, and as a means to accommodate the traffic of the intermediate towns, and to collect and bring to either termini the trade of the country, was of no use whatever. The line of the Armagh, Coleraine, and Portrush Railway, avoids all these errors; it passes contiguous to all the towns, which exceed 20 in number, on the route, and gives the fullest accommodation to the intermediate traffic, which is that that pays best: it crosses the lines near their source, requiring bridges of no great magnitude—it crosses the River Bann at Kilrea, where it is both shallow and narrow, and takes in the important town of Ballymena in its route, which the other left entirely out. There are no heavy embankments or cuttings, and the gradients on the line are for all practical purposes level, and there was not one yard of the Armagh identical with the other. When the line of the Armagh, Coleraine, and Portrush was published, Mr. Armstrong and his friends perceived their error, and adopted that portion of the line of the Armagh, lying between Kilrea and Stewartstown, still retaining the portion between Kilrea and Portrush, with the very expensive crossing of the Bann, and ascending up to Kilrea, at a height of 120 feet, over a portion of their line, distant only one mile from Kilrea, giving by this means, a gradient that is not to be justified by any care that can be made out; they also proposed a line from Castle Dawson to Londonderry, calling it a branch, through a most difficult and thinly populated country, where the gradients would be in many cases one in twenty!! From Stewartstown, they descended to the level of the low grounds formerly mentioned at Verner's Bridge, and make thence two branches, one to Armagh, and the other to Portadown, in the form of a Y, distant from each other, at the widest extremity, only twelve miles; and to save this round of twelve miles, or twenty minutes of time, they make fifteen miles of railway through a difficult and highly ornamental country, where the purchase of the property alone would not be less than 3,000*l.* per mile, if so little as that, and leaving out the important towns of Blackwater, Moy, Charlemont, Dungannon, Coal Island, not one of which would be in the slightest degree benefited.

"The third, and last scheme, was an alteration of the second, by leaving out the branch to Londonderry, and retaining the remainder. The capital for scheme No. 1, length about seventy miles, was 600,000*l.*—little enough, considering the line they took. The capital for scheme No. 2, length 105 miles, was 640,000*l.*, or something over 6,000*l.* per mile!! and that for a line, a portion of which (the Derry branch) was through a most difficult country. The capital for scheme No. 3 was 640,000*l.*, for about eighty-seven miles, for, although they lopped off the Derry branch, they did not lop off anything of what they formerly estimated it would cost. This they can, *perhaps*, explain, but certainly it does not look well, and the public have no guarantee that there will not be a change in scheme No. 4."

Mr. Armstrong, who inspected these different lines, is a respectable land-surveyor in Dublin, but has no experience whatever in railway matters.

SAMUDA AND CLEGG'S ATMOSPHERIC RAILWAY.

We perceive that the system of Atmospheric Railways is now likely not only to be tested by practical experiment on an extended scale, but judiciously approved or disapproved by a decision of the Legislature. A few nights since a petition was presented and laid on the table, purporting to be the prayer of Messrs. Samuda and Clegg, for the appointment of a select committee to enquire into the merits of the atmospheric system, and to hear the evidence of engineers and other persons upon the subject. If men, fully competent to understand and pronounce an opinion upon a subject so foreign to the great majority of our representatives, be found and selected, we consider that a more useful or valuable tribunal could scarcely be appointed. The system has been too long in abeyance: true, it has been tried in one or two localities; but, as an invention professing to excel, and anticipated to supersede locomotive power, can we say that its principle has been tested? Surely the partial and limited experiments at Wotton and Scrubs and Dalkey cannot be called a fair trial; nor will the reluctantly acceded adoption at Crofton, tend to give that satisfaction to the public, and authority to the results, which a principle, at once so novel and stupendous, unquestionably deserves. Public companies, either on the point of constructing their lines or desirous of effecting a change, where such could be accomplished with safety and economy, have a right to be in possession of a solemn and authoritatively pronounced opinion on a system which offers them innumerable advantages in practical working, safety, and expense; and thus be enabled, instead of taking, for granted, the opinion of any particular engineer, which another as eminent, would as confidently contradict, to judge for themselves; and, by the authority and dictum of a verdict, passed by disinterested as well as competent parties, who had weighed well the profession of the patentees, the statement of witnesses, the evidence of engineers, and the reports of practical experiments, be able themselves, at one view, clearly and confidently to form a judgement on conflicting or interested opinions. Such an authority, the patentees themselves have sought; this, of itself, is an earnest of their own confidence, as well as anxiety, on the subject; and, in justice to themselves and the public, we trust that, before long, we shall see a committee, composed of talent and perseverance, equal to the undertaking, enquiring into the system, and applying their energies and information to the fuller development of a most interesting and important principle.

MARSEILLES AND TOULON RAILWAY.—From the great encouragement given by the French Government to the construction of railways, the French lines stand very high in the market. The projected line from Marseilles to Toulon is thought very favourably of, as it will pass through a very densely populated country, and the route will present but few engineering difficulties. Marseilles is one of the largest cities in France, the population amounts to nearly 200,000—Toulon contains about the one-fourth of that number. There is very great intercourse between these two cities; the number of passengers, by diligence alone, amount to 140,000 per annum. The estimated capital of the company is 1,200,000*l.*

DIRECT NORTHERN RAILWAY COMPANY.—The committee beg to inform their shareholders, that it is their intention to adopt and carry into effect the report of the Board of Trade in favour of this line from Lincoln to York, and to abandon the portion of the line between Lincoln and London. That immediate steps will be taken to enter into a friendly arrangement with the companies of the Cambridge and Lincoln, and Eastern Counties, and Tottenham and Farringham-street Extension, to carry out the report of the Board of Trade. By order of the committee, WILLIAM AMISNICK, Secretary. Direct Northern Railway Offices, 64, Moorgate-street, March 12, 1845.

A MEETING OF THE SHAREHOLDERS OF THE PROJECTED CAMBRIDGE AND LINCOLN RAILWAY.—convened by advertisement in the Times of Friday, March the 7th inst., held at the George and Vulture Tavern, Cornhill, on Monday, the 10th of March.

E. S. KENNEDY, Esq., in the chair. The advertisement convening the meeting having been read, and the convenor not having thought proper to attend the meeting, it was unanimously resolved— That this meeting expresses its strongest disapprobation of the unworthy means used by the anonymous writers of the advertisement to depreciate the property of the shareholders of the Cambridge and Lincoln Railway by such calumnious reports, and that they deem such conduct disgraceful and most dishonourable to the character of Englishmen; and that this meeting express their strongest belief in the excellence of the projected railway, and recommend it to the continued support of the shareholders and the favourable sentiments of the public at large. That it is the opinion of this meeting, from the statements just made by Mr. William Vickers, that the series of lines to the coal-fields, north of the Cambridge and Lincoln line—namely, the Lincoln, York, and Leeds Direct and Independent Line, and the Goole, Doncaster, and Sheffield and Manchester Junction—will, if made, bring a large quantity of traffic on this line, and at the same time prove great benefit to the public at large, by effecting a reduction in the price of coals on the coast of the line and in the metropolis. (Signed) E. S. KENNEDY, Chairman. That the thanks of this meeting are due, and are hereby given, to the chairman for his ability in conducting the business of this meeting.

SAMBRE AND MEUSE RAILWAY.—At a Meeting of the proprietors of the Sambre and Meuse Railway, held at the London Tavern, on the 11th of March inst., WM. PARRY RICHARDS, Esq., in the chair, the following RESOLUTIONS were agreed to—

Proposed by the Chairman, seconded by the Hon. Howe Browne, That the report now read be received and adopted, and be printed and circulated among the subscribers.

Proposed by the Chairman, seconded by C. H. Lindo, Esq., That this meeting accepts the terms and conditions of the first convention of June last, with the Belgian Government, as modified by the convention of the 1st February, 1845, and by the law as it has passed the Belgian Chambers, and agrees to be bound by them effectually as if they had formed part of the terms stated in the prospectus of the 27th day of May, 1844, and that the terms and provisions mentioned in such prospectus be confirmed in all other respects.

Proposed by the Chairman, seconded by Mr. Cummings, That the directors be requested to give notice forthwith of their intention to call in the accountable receipts hitherto given to the subscribers, and to exchange them for certificates for shares on the modified conditions, and that an early day be named for such exchange.

That such notice be given in two daily morning London newspapers, and in the *London Gazette*, and that all parties who shall not within the time so to be limited exchange their receipts, shall be held to have abandoned the option of continuing as subscribers to this undertaking, and shall be entitled thenceforth to receive back only their original deposits.

Proposed by David Barclay, Esq., M.P., seconded by Captain Heavisdale, That the thanks of this meeting be given to the directors for their indefatigable exertions on behalf of the company, and to the chairman for his able and efficient conduct on the present occasion.

PARIS AND LYONS RAILWAY (LAFITTE'S ORIGINAL COMPANY).

Directors.
Mons. Charles Lafitte, Paris
James Henry Attwood, Esq., 13, Upper Seymour-street, Portman-square, London
Comte d'Alton Shée, Pair de France, Paris
John Moss, Esq., Liverpool
The Right Hon. G. R. Dawson, 15, Upper Grosvenor-street, London
William J. Chaplin, Esq., Adelphi Terrace, London
Mons. E. Simons, Administrateur des Messageries Royales, Paris
Mons. Alexandre Berthier, Administrateur des Messageries Générales, Paris
Charles Devaux, Esq., 62, King William-street, London
Hardman Earle, Esq., Liverpool
Mons. Ed. Blount, Paris
Ross D. Mangles, Esq., M.P. London
John Masterman, Junr., Esq., Nicholas-lane, London
Mons. Moreau Chalmers, Paris
Matthew Uzzell, Esq., 62, King William-street, London

The provisional committee of the Paris and Lyons Railway Company having ascertained that it is the intention of the French Government to lease the line to a company able and willing to reimburse the state for all expenditure hitherto incurred, and to undertake all further outlay which may be required for the entire construction of the line, have determined upon increasing the capital to the full amount necessary for this purpose. In conformity with the terms of subscription contained in the circular of the 10th August last, which contemplated such a contingency, they have resolved upon offering to the shareholders Two New Shares for every Old Share, subject to all the liabilities of increase or diminution hereafter, as in the former case, and subject also to any further call which may be found necessary. All shareholders who may wish to avail themselves of this option are requested to apply at the office, and to produce the original receipts, between Tuesday, the 11th, and Saturday, the 29th inst.

Notice is hereby given, that all parties not applying within the prescribed time will be considered to have waived their claim to the additional shares, which will be otherwise appropriated. By order, ED. AIME, Secretary. 62, King William-street, March 6, 1845.

PARIS AND LYONS RAILWAY (CALON'S COMPANY).

—The company has been for some time prepared to tender to the Government for this line, according to the conditions hitherto required.

Capital 162,500,000*fr.*, or £20,500,000, in 325,000 shares, of 500*fr.*, or £20, each. Deposit 50*fr.*, or £2, each share.

PROVISIONAL COMMITTEE. The provisional committee of this company has availed of the power given it by its statutes to increase its number. The committee is now composed as follows—

Monsieur Henri Barbet, Maire de la ville de Rouen, Membre de la Chambre des Députés.
Commandeur de la Légion d'Honneur.
Monsieur Calon, jeune, Banquier, à Paris.
Monsieur Lavelassière, Négociant en Métaux à Paris, Chevalier de la Légion d'Honneur, et Lieutenant-Colonel de la 4^{me} Légion de la Garde Nationale.
Monsieur Alphonse Lanrent, Ancien Président du Tribunal de Commerce de Blois, Associé de la Maison de Banque Chambert, Lefebvre, &c., Administrateur du Chemin de Fer d'Orléans à Bordeaux.
Monsieur le Baron W. D. Lavenant, Propriétaire à Paris, Chevalier de la Légion d'Honneur.
Monsieur Armand Donon, Associé de la Maison Calon, jeune.
Monsieur Luzarches, Ancien Maître de Forges, Administrateur et Sous-missionnaire du Chemin de Fer d'Orléans à Bordeaux.

ENGLISH DIRECTORS.
W. ORMSBY GORE, Esq., M.P., Chairman.
Thomas Chapman, Esq.
John Garrat Cutley, Esq.
Sir R. Jenkins, G.C.B.
Charles W. Graham, Esq.

BANKERS.
Monsieur Calon, jeune, Paris.
London Joint-Stock Bank, London.
Liverpool Union Bank, Liverpool.
National Provincial Bank, Manchester.
National Provincial Bank, London.
Messrs. Smith, Brothers, and Co., Hull.

ENGINEERS.—J. M. Rendel, Esq., F.R.S.
Solicitor—W. Borradaile, Esq., 20, King's Arms-yard, London.

The incorporation of the above society was passed and registered before Mons. Guérin Notaire Royal, at Paris, on the 8th and 9th of December last, 1844.

Prospectuses and forms on which to make applications for shares are ready at the offices of the company, 19, King's Arms-yard, London, and may be obtained on payment of a fee of 1*fr.* each, except on the forms above-mentioned. By order of the board, GEORGE BYAM, Secretary.

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